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Massachusetts Medical Society.

THE SHATTUCK LECTURE.

AN ANATOMIC AND MECHANISTIC CONCEPTION OF DISEASE.*

BY JOEL E. GOLDTHWAIT, M.D., BOSTON.

THE subject which has been announced for this, the twenty-sixth lecture given under the conditions of the bequest made by Dr. Shattuck, was chosen after much consideration as being of broad general interest and as having to do with the fundamentals of medical knowledge. It seemed possible that such a consideration might be of sufficient importance to be worthy of the occasion, and if it be so considered it will be a satisfaction to me, as being a slight return for the honor which you have conferred upon me in selecting me as your speaker.

The basis of that which is here presented is work which has been carried on for a number of years in the attempt to find the cause of the chronic disease conditions for which the orthopedist is consulted. A fairly exhaustive pathologic investigation failing to show more than the nature of the lesion, with similar experience from the bacteriologic and the biochemical investigations, led to the study of the fundamental anatomic conditions existing in patients afflicted with these diseases, with results which have been increasingly more suggestive the farther the study has been carried.

* Delivered before The Massachusetts Medical Society at Boston, June 8, 1915.

It is this study which represents the first part of this paper and which has been reported in part from time to time by the writer in articles which have called attention to the variations in the formation of the viscera and skeleton, as well as to the peculiarities of the particular function.[1]

In this investigation it soon became evident that the anatomic formation described in the textbooks as normal to the human being, rarely exists in the individual having the common chronic disease, and in the study which naturally followed not only were the different anatomic types recognized, but in the hope of better understanding the variations found, the structure of the lower orders of mammals was studied with considerable care.

Recently, with the assistance of Dr. John Bryant, not only have these anatomic findings been verified in connection with his work,[2] but the literature has been carefully examined and the fact that most of the elements to be presented have already been recorded has served to increase the belief that the observations here stated are correct and that the appreciation of these elements is absolutely essential if any impression is to be made by our profession upon the great field of chronic medicine which today represents such a reproach to us.

The fact that no more has been accomplished as the result of these numerous contributions to medical literature in the past is probably due to the fact that most of the work is fragmentary in character and that it is only by piecing together many of these separate contributions that the significance of each with the great importance of the whole is realized.

It is the hope, that in this communication, the independent observations which have been carried on by the speaker, may be so strengthened by the similar findings of these other observers that this knowledge may be generally applied to the study of our patients.

In such an investigation, while the first thing that impresses one is that the so-called normal type of human being rarely exists in the chronic patient, the second is that the variations from the normal group themselves into two general types from which again there are many variations, but that if the original type is appreciated the variations from it are easily traced and understood.

In order to better understand the types to be described, it is well to consider for a moment that which from the textbooks we call normal.

Normal Human Type. (Figs. 1, 2 and 3).

FIG. 1.
The normal human type.

There is very little variation to be found in the works of anatomy in that which is called normal. The torso is of moderate length and of moderate breadth. The thorax is full, and moderately rounded, the upper abdomen is rounded and in circumference about the same as that taken just above the nipple. The costal border is formed in an angle from 70° to 90°. The diaphragm is high and there is generous space under the ribs for the viscera. All of the abdominal viscera, except the lower portions of the colon with the sigmoid and part of the small intestine, are above the umbilicus. Around the viscera and representing a definite part of their support, as well as giving much protection from trauma to the sympathetic nerves, ganglia and blood vessels, are well-defined masses of fat. The lower abdomen is flat, while the upper abdomen is firm and rounded, there being no marked

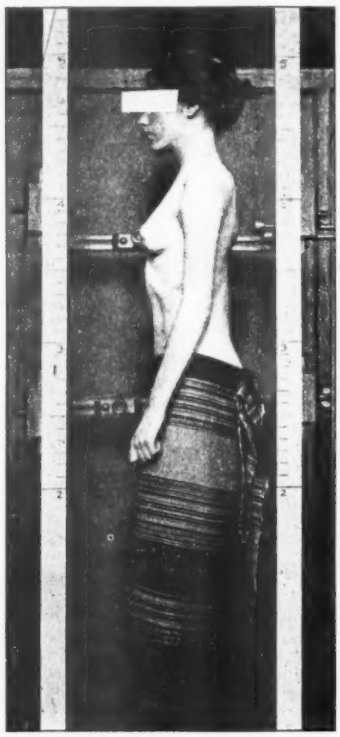

FIG. 2.
Normal human type, showing the normal inclination of pelvis, normal elevation of ribs, normal position of shoulders, etc.

FIG. 3.
Normal human type, showing the moderate breadth of the body.

depression under or inside the edge of the ribs. The spine shows a mild curve forward in the lumbar region, with the inclination backward from the mid-lumbar, this resulting in the general inclination of the abdominal cavity of 30° downward and forward from the perpendicular. The pelvis, in the axis of its cavity, is inclined downward and backward about 60° from the perpendicular so that the two axes form nearly a right angle.

Of the special viscera, the stomach is of the pear shape, and is placed well up under the ribs, occupying the uppermost part of the abdominal cavity upon the left side. In this position the discharge of its contents into the duodenum requires but little effort.

The small intestine is about 20 feet in length, is of good calibre and muscular tone. The large intestine, of five to six feet in length, is adherent to the posterior abdominal wall upon the right side until it reaches the region of the liver, when it turns forward and inward, crossing with a slight downward sag to the splenic flexure well up in the left side of the abdomen behind the stomach, from which point it is again attached to the posterior wall (retroperitoneal) until it reaches the sigmoid, where, after a few turns, it becomes the rectum. The transverse part of the colon is attached to the liver upon the right side and to the stomach in the center of the body and upon the left side. The stomach and liver are naturally attached to the diaphragm, and the suspensory ligament of the diaphragm is the pericardium, especially the right side, which is finally attached to the anterior part of the low cervical spine.

In the upper part of the abdomen is the solar plexus of the sympathetic system, the ganglia being so placed that when the organs are in their proper position there can be the least possible pressure upon or irritation of them.

These and many other elements are described in the anatomy as normal, and while this type does exist very commonly among those who are well, nevertheless, among the individuals who consult the physician, especially with chronic disease, this type is not often seen, and it must be hard to understand the conditions present in our patients unless their special structural formation is known.

Of the variations from the normal there are two well marked types which are easy of recognition and are here described.

Splanchnoptotic (Glennard); *Congenital Visceroptotic* (Goldthwait,[1] Smith[3]); *Carnivorous* (Treves,[4] Werner,[5] Bryant[2]); *Hyper-ontomorph* (Bean[6]); *Macroscelous* (Montessiori[7]); *"Narrow-Backed" (Industrial).* (Figs. 4, 5, 6 and 7).

The type of human being for which the above and other terms have been used is essentially different from the so-called normal in most of its characteristics. The whole figure is lighter, not

Fig. 4.

The slender congenital visceroptotic or carnivorous type, showing the proportionately greater length of body, the increased low lumbar curve, forward inclination of pelvis, forward position of the shoulder, flat chest, prominent lower abdomen, narrow upper abdomen, forward position of head, etc.

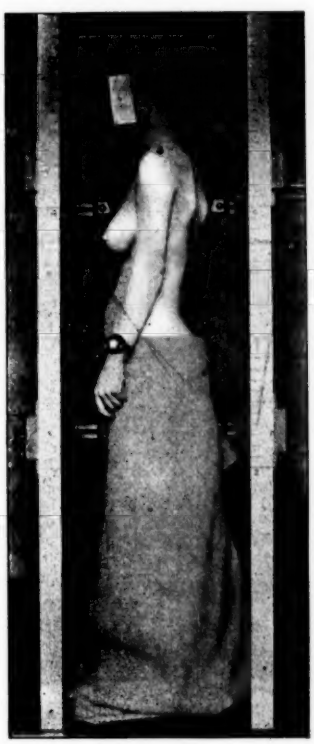

Fig. 5.

Slender type, showing the same features as in Fig. 4, except an increase in the forward inclination of the pelvis and more marked forward position of the shoulder, and a more completely flattened chest.

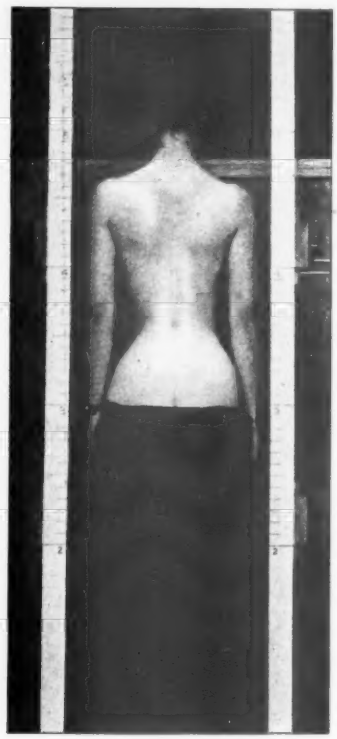

FIG. 6.
The congenitally visceroptotic type, showing the extremely slender back.

FIG. 7.
The slender or congenital visceroptotic type in child, showing the the same general characteristics as in adult.

only that there is less fat, but the skeleton is lighter and more slender in form. The skin is soft and delicate. The hair is more abundant in the usual places and frequently shows on parts where it is not normally seen. The individual is usually either tall and slender or small and delicate. The head is proportionately large, the face and jaw are narrow. The palatal arch is high. The adenoid and tonsillar tissue is apt to be excessive. The ears are usually large and prominent, projecting outward and forward. The torso is longer in proportion than the so-called normal and is also narrower. (Fig. 6). The increased length is partly in the thorax, but chiefly in the lumbar region. The ribs are usually longer than is normal, the tenth rib is almost always free, and when seen in the adult, the downward inclination of the lower ribs is very marked, they at times, in the standing position, touching the upper part of the ilia. The spine is smaller in size than normal and the lumbar vertebrae are more like the so-called normal dorsal vertebrae in shape, the body being of about the same width laterally as it is deep antero-posteriorly. (Fig. 8). There are fre-

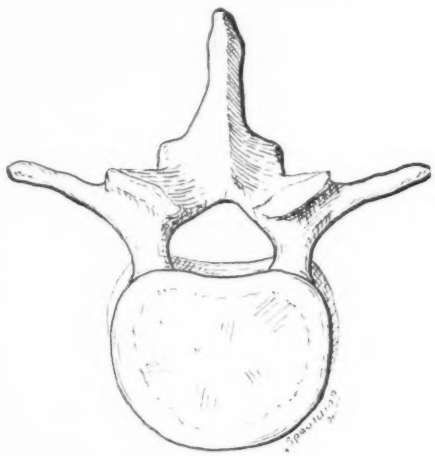

FIG. 8.
Lumbar vertebra in slender type, showing small body to the bone, with slender laminae and with flat articular processes.

quently six vertebrae in the lumbar region with the full number of sacral vertebrae, this being one of the reasons for the greater proportionate length of the body. The transverse processes are small and short and the articular processes are usually flat (not crescentic). Because of this formation, the lumbar spine is much more flexible than the normal type and it is this anatomic type from which the fancy dancer, the hurdler and acrobat are developed.

The thorax is of fair size, the lungs are apparently smaller than normal, and the smaller size of the heart is easily demonstrated by the x-ray. The abdominal viscera have peculiarities in shape and attachment unlike the normal human. The stomach is long and tubular, instead of the normal pear shape. Its attachments are less firm, so that the possible downward displacement in standing is much greater than normal. The duodenum is usually attached to the normal position, but this is not constant. The small intestine as a whole is much shorter than normal,

containing from 10 to 15 feet instead of the normal 20 feet, the walls are less thick, and the lumen smaller. According to Bean,[6] the length is from 12 to 15 feet; Swaim[8] from 10 feet up; Bryant[2] from 10 to 15. The mesentery is longer than normal, so that in standing the small intestine is almost entirely in the upper pelvis or lower abdomen. The large intestine is shorter than normal, from three to five feet, and much more mobile. Almost always upon the right side there is a free mesentery so that this portion may change its position easily, and frequently the left side also has a mesentery, so that in the upright position the entire colon lies below the crests of the ilia. The most common condition, however, is with the normal retroperitoneal position upon the left side with the right side free. The transverse part of the colon is usually attached to the stomach, which means that it will be found below the position of the stomach, even though the stomach may have its lower border in the pelvis. With the transverse colon, while it is usually attached to the stomach, it frequently has an entirely free mesentery, as is natural with even the purely normal type in the early embryologic state. In this type the vermiform appendix is usually well developed, while in the next type to be described the appendix apparently is much less developed, which may in part explain the common occurrence of appendicitis in the thin, slender individuals. With this type of anatomy there is very little retroperitoneal fat, palpation of the flanks is easy, the kidneys are naturally mobile, the liver is smaller and is more loosely attached than normal.

It is this type of anatomy in which the scaphoid type of scapula (Graves[9]) is found. The muscles are formed of the long and slender fibres. The extremities vary in length as one would suppose in studying comparative anatomy, the carnivora at times having very long legs, as the greyhound, or very short legs, as the otter, but they are usually longer than is considered normal and both arms and legs are relatively slender. The feet are slender and often of unnaturally high arch. The hands are slender but long, the fingers being very slender and tapering. While this type is usually thin, at times there is much accumulation of fat. If this is present it usually develops rapidly, disappearing at times equally rapidly, and the fat is always soft with very little connective tissue and suggests poor health.

Herbivorous (Treves,[4] Werner,[5] Bryant[2]); *"Broad Backed" (Industrial); Meso-ontomorph* (Bean[6]); *Brachyscelous* (Montessiori[7]). (Figs. 9, 10, 11 and 12).

Upon the other side of the normal human type, and in marked contrast to the slender, carnivorous type, is the heavily built, broad backed type of human, in which so many of the characteris-

FIG. 9.

The heavy or extreme herbivorous type, showing the large, heavy build of the body throughout, the relatively straight position of the pelvis, the backward bend occurring in the upper lumbar region rather than in the low lumbar, showing the round-shaped head, flat ear, broad neck, with the shoulder well back on the thorax.

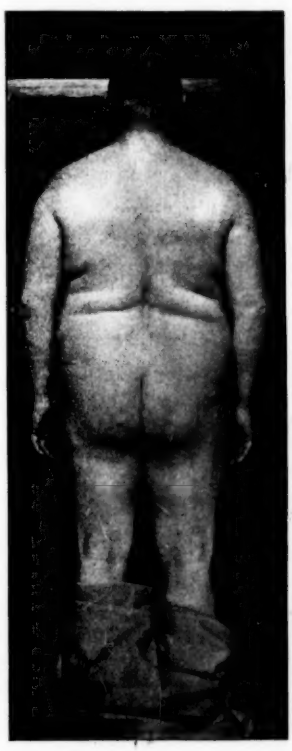

FIG. 10.

The broad backed or herbivorous type, showing the extremely broad body.

FIG. 11.

The broad, heavy type, showing all the general characteristics of Figs. 9 and 10.

FIG. 12.

The broad, herbivorous type in the child, showing the same general characteristics of position of pelvis, curves of spine, position of shoulder, high chest, prominent upper abdomen, broad face, flat ears, as in Figs. 9, 10, and 11. The position of hyperextension at the dorso lumbar juncture is well shown in this figure.

ties are similar to those found in the herbivorous creatures that this term has been used for their designation.

In this type the body is built upon much heavier lines throughout. The skeleton is larger in proportion and heavier in structure. The muscles are large with coarse fibres. The skin is coarse with scant growth of hair, which is lost early. There is an excess of fat throughout the body, but this is bound together with much connective tissue so that the flesh feels hard and firm in contrast to the soft, flabby feel such as is peculiar to the slender type. The head is round, the face is broad, the jaw is square, the ears are usually placed flat against the side of the head, and as a rule are not very large. The neck is short and thick, the shoulders are broad and square. The body as a whole is broad and relatively short. The chest is larger both in the lateral and antero-posterior diameters than the normal. The diaphragm is high, the costal border is formed in a broad angle, rarely less than 90° and sometimes more. The tenth rib is usually attached to the conjoined cartilages in front and the last two ribs are relatively short. The lumbar region is short, partly because of the frequent presence of only four lumbar vertebrae and partly because the sacrum is set well down between the wings of the ilia. The abdominal cavity is broad and deep. The stomach is large and pear shaped. The duodenum is attached as in the normal. The small intestine as a whole is much longer than the normal, and ranges from 25 to 39 feet (Bryant[2]). The large intestine is larger and longer than normal, from five to eight and one half feet (Swaim[8]), with the retroperitoneal attachment of the ascending and descending portions, the added length showing in the longer transverse portion and in the sigmoid. The liver is large but well up under the diaphragm. There is much retroperitoneal and general abdominal fat so that the kidneys are well held in place and the sympathetic ganglia are well protected.

The joints in this type are much less flexible than in either of the other types, the individuals as a whole being strongly and heavily built.

The spine is broad and heavy throughout, but in the lumbar region this is especially noticeable. The lateral diameter of the vertebral bodies in this region is considerably greater than the antero-posterior (Fig. 13), the articular processes are strong and large and almost always of the crescentic type. The transverse processes are long and broad, and the process of the last lumbar frequently forms an articulation (the lumbo sacral transverse articulation) with the top of the sacrum. The long and broad transverse processes upon the lumbar spine are similar to that which is found in the herbivorous animals and which produces the lateral rounding of the back seen in all the hoof footed creatures. This formation apparently furnishes protection

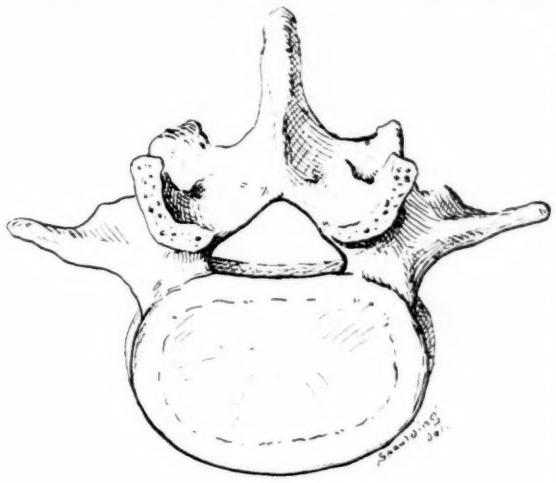

Fig. 13.

Lumbar vertebra of heavy or herbivorous type, showing the broad body and the heavy laminae.

and attachment for the many coils of intestine in the abdominal cavity.

Because of the shape of the vertebrae and the character of the articulation with the sacrum, there is less lumbar curve forward than is present in either of the other types (Figs. 1 and 2 and 4 and 5), and the forward inclination of the pelvis is also less. The axis of the sacrum is more nearly perpendicular. In this type not only are the wings of the ilia higher than in the normal so that the transverse process of the last lumbar articulates not only with the sacrum, but also at times with the ilium, and in a few cases the transverse process of the vertebrae above also rests against the ilium or has strong ligamentous attachment to it.

The extremities in this type vary in length as one would expect from the study of the comparative anatomy of the herbivorous creatures, but are always heavy. The legs are large, the knees are straight, the feet are broad in proportion to length, and the arch, while it may be very strong is usually quite low. The arms are heavily built, and the shoulder attachment is well back upon the thorax, giving the square shoulder appearance. The hands are broad and "chubby," both in the palmar portion and in the fingers.

Spinal Motions of the Different Types.

Because of the different structure of the bones of the spine, the motions must vary. In the normal, in bending forward the spine is well rounded and laterally there is some motion beginning at the lumbo sacral juncture and extending up to the low dorsal region, while in backward bending considerable motion is allowed. In the carnivorous type this is similar, only the amount of motion is much greater, as would be expected from the description of the bony formation of the type. With the herbivorous type, as must be apparent, the spinal motions are much less free. In this, the forward bending is made largely at the hips, there being but little in the spine. Laterally practically no motion is allowed except at the dorso lumbar juncture, none whatever being allowed in the low back if the lumbo sacral transverse joint exists. If this exists upon one side, no motion at that region will be allowed to that side, while to the other side slight motion may be allowed. In backward bending very little is allowed, and if the lumbo sacral transverse joint exists, none will be allowed at the lumbo sacral juncture.

Such are the three general types which are common in the human family, and the fact that such types exist there can be no question if the passersby upon the street are noticed, even if one is not willing to accept the statements of those who have studied anatomy in this way. The thin carnivorous person is there side by side with the broad, full faced herbivorous person, with the normal human also present, and the characteristics are so distinct that nothing more than the glance is necessary to recognize the special form. The characteristics are equally apparent in childhood as in adult life, as is indicated by the accompanying illustrations.

The difference in the types and the fitness of each for different forms of work is already known, and a person who is at the head of an organization employing large numbers of laborers states that when an order for laborers is given it is expected that it will indicate so many "broad backs" or so many "narrow backs." The "broad back" is fitted for the ordinary heavy work, while the "narrow back" is fitted for the work requiring greater agility, such as climbing poles or trees, prospecting, running the lines, etc. The "broad back" carries the heavier load, but the "narrow back" carries his lighter load more rapidly.

The difference in the anatomic types is also recognized, consciously or unconsciously, in art, and nothing can be more perfectly normal than the early (not always the late) Greek figures, or Michael Angelo's "David," or William Hunt's "Bathers." The type which Rubens almost always depicts is the heavy, full blooded herbivorous type, while the slender, carnivorous type is the one depicted by Botticelli and Fra Angelico, or by Puvis de Chavannes of the modern school.

The fact that such types exist, but that they also have different characteristics which should be recognized in their training, is shown by Dr. Montessiori in her book, "Pedagogical Anthropology," in which the pictures of the types are shown and the intellectual characteristics discussed.

In athletics also the appreciation of the different physical types is clearly understood. The hurdler or the runner is usually of the normal or the slender type, while the hammer thrower, the shot putter or the wrestler is usually of the heavy type. The heavy men are usually found in the line of the football team, while in the backfield the more slender and agile persons are found.

The types exist, and in a very large number of instances the types are pure, the carnivorous being carnivorous throughout, the normal human being the normal human throughout, and the same is true of the herbivorous. In other instances, however, the types are mixed, and it is here that the greatest difficulty exists in understanding the symptoms or in planning the treatment. A carnivorous type in general build and viscera may have an herbivorous type of spine, a combination which is quite common in women. A carnivorous type of stomach and intestine may exist with a normal liver and kidneys, in so far as shape and position are concerned. The normal type in general may have one or many of the characteristics of either the carnivorous or the herbivorous. The herbivorous type may show characteristics of either of the others and probably the most common variation in this type is the smaller spine and the imperfectly attached colon, but of the full length.

That such differences exist in the anatomic formation of members of the human family there can be no question, and it is not unreasonable to expect such differences if the biologic principles of the development of the race are considered. The human being as the highest type of mammal naturally inherits something of the strains which have shown themselves in the various species through which the advance of the mammalian group has occurred, and it is only by studying comparative anatomy that the various differences of type can be understood.

From the purely medical point of view the recognition of these different types is important since the types apparently carry their own potential of disease. The tuberculous and the infections in general, the nervous diseases and acute mental disorders, the hyperglandular disturbances, the progressive anaemias, the atrophic arthritis, many of the intestinal disorders, etc., naturally are associated with the slender type. The arterio-sclerosis, hypertrophic arthritis, gout, diabetes (not the insipidus), chronic disease of the kidney, gall stones, the prostatic hypertrophy, the degenerative mental disorders, etc., are common to the heavy type. The suggestiveness of this in treatment must be obvious

Habits of Posture in the Different Types and the Effect upon the Physiology.

Not only has the study of the chronic patient shown that the different anatomic types exist, but that this alone can hardly explain all the phenomena. The more the problem is studied, the more evident it becomes that the life of the creature as an erect biped is a very different thing from that of the quadruped in so far as the function of the different parts is concerned.

One of the penalties that the human being is forced to accept in his being the highest type of mammal, is that in locomotion, with the body used as an erect biped, gravity is constantly operating to drag the organs downward out of their normal position, as well as to draw the upper part of the body downward and forward into positions which must mean strain and weakness. This element, together with the anatomic form, seems many times sufficient to cause the conditions seen in chronic medicine.

The counteracting element, to offset such a handicap and prevent the race from being irreparably harmed, is the intelligence with which the human being is peculiarly endowed. The real purpose of such a paper as this is to help in the training of this intelligence so that life may be a period of wholesome, healthy development, with the fullest possible energy available for whatever stress to which the individual may be subjected.

The way the body is used is of quite as much importance as the structure of the body itself. Either type has the potential of good health if used rightly, but each has an equally definite potential of disease if the proper relationship between the many parts is not preserved. With the normal type it is naturally easier to maintain this relationship, but the possibility of not maintaining it is painfully apparent as one goes among one's fellow men. With the other types the special postures or the form of the maladjustment naturally differs as one would expect from the structure.

Since the pathologic changes which are seen are apparently due very largely to this imperfect adjustment of the parts, it is of the first importance that the postures or special elements of maladjustment which are peculiar to the different types should be appreciated. It should also be remembered that with the chronic patient the large majority of the cases fall into the slender, congenital visceroptotic type or the broad, herbivorous type.

The Normal Human.

When the body is used rightly (Fig. 1 or 2), all of the structures are in such adjustment that there is no particular strain on any part. The physical powers are at their best, the mental functions are performed most easily, and the personality or spirit of the individual possesses its greatest strength.

When used rightly, or fully erect, the feet, knees, hips, spine, shoulders, head and all the portions which represent the frame of the body, are used in balance, with the greatest range of movement possible without strain. In this position the chest is held high and well expanded, the diaphragm is raised, and the breathing and heart action are performed most easily. The abdominal wall is firm and flat, and the shape of the abdominal cavity resembles an inverted pear (Forbes, Williams[16]) (Fig. 14), large and rounded above and small below. The ribs have only a moderate downward inclination. The subdiaphragmatic space is ample to accommodate the viscera. In this position, also, there is no undue pressure upon, or interference with, the pelvic

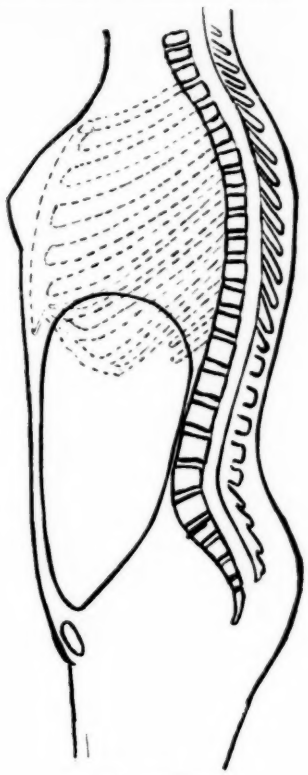

Fig. 14. (Williams.)

viscera or with the large ganglia at the back of the abdomen and in the pelvis.

Relaxed Position.

If the body is drooped or relaxed, so that the shoulders drag forward and downward, the whole body suffers, the weight is thrown imperfectly upon the feet, so that the arch must be strained; the knees are slightly sprung, which shows by the crepitating joints; the pelvis is changed in its inclination, with strain to the sacro-iliac joints and low back. The increased forward curve of the upper dorsal spine results not only in strain to the intraspinous ligaments, but also forces the shoulders forward, with frequent irritation of the bursae about the shoulder, or compression of the brachial plexus, with pain and neuralgias in the arms, while the craning forward of the head must result in strain to the posterior part of the cervical spine.

In this position the chest is necessarily lowered, the lungs are much less fully expanded than normal, the diaphragm is depressed, the abdominal wall is relaxed, so that with the lessened support of the abdominal wall, together with the lowering of the diaphragm, the abdominal organs are necessarily forced downward and forward. When this occurs the possibility of mechanical interference with the function of the organs is not difficult to imagine, and it becomes apparently a mere matter of chance which organ is affected.

The thing that is important in the interpretation of the many symptoms which the patients describe is that the body is most intimately related in its different parts so that no one part can be used wrongly without the body as a whole suffering. For this reason if these various groups of symptoms are to be considered as purely local and distinct lesions the results are sure to be unsatisfactory. The body as a whole should be considered and not just the chest or the abdomen or the feet or the back or any one part, and it should be considered with reference to use in the different positions in the routine of life, especially those which are maintained for long periods, the occupational postures. In sitting it is perfectly possible to sit so that the trunk is in practically the same shape and with the different parts in practically the same relation, as they are when the body is used fully erect. At the same time in sitting it is very common to have the body markedly drooped, so that the body is rounded forward with the lumbar spine entirely reversed in its curve, with the ribs low, so that the thorax practically telescopes into the abdominal cavity. When such a position is studied with reference to the mechanics of the function of the organs the wonder is not that disturbances result, but that the disturbances are not more marked.

In such a study of the mechanics of the physiology, the positions assumed when the patient is lying down should be investigated. It is perfectly possible to produce practically the same effect upon the shape of the body and upon the thoracic and abdominal cavities that is present when the patient is sitting in the slouched position, if when lying down several pillows are placed under the head and shoulders, as is so frequently seen. In such a position naturally the breathing and circulation, the digestion, and the other physiological functions cannot go on rightly, and the restless, dreaming sleep is many times due to no other cause than this.

The importance of the proper relationship of the parts should be borne in mind under all conditions, and especially at the times of occupation or when the postures are assumed for continuous periods. It is under such conditions that naturally the greatest harm results, and it should be remembered that irrespective of the type, the postures which are assumed as the body is used determine very largely whether the individual is to be well or ill. ***The most perfect, anatomically, may have the poorest health, while the most imperfect, anatomically, may have good health.*** Fig. 15 is of the normal type as is shown when the body is held erect (Fig. 16) but the posture commonly maintained (Fig. 15) suggests very little of normal vigorous health.

The postures which are assumed by the other anatomic types are perfectly characteristic, so that once they are appreciated, the posture itself very largely indicates the type of anatomy to be found in the individual. It is always to be remembered that while the type is present at

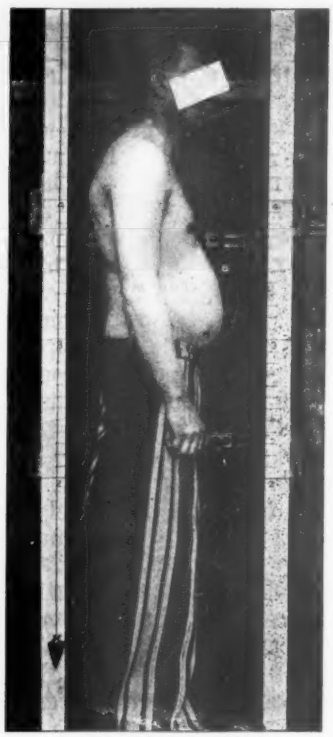

FIG. 15.
The normal human type, with acquired habits of bad posture, with marked visceroptosis, drooped shoulder, etc.

FIG. 16.
The same case as Fig. 15, except that the body is held at attention, showing the way the viscera are drawn up under the diaphragm, giving the normal lines of the body when the body is held erect.

the time of birth, that the extreme characteristics which are seen in adult life are largely the result of stretch and strain due to the downward displacement which is the rule if the body develops without guidance. As long as the child remains a quadruped, as it is in the first two or three years of life, the special peculiarities are of very little concern, but as soon as it begins to assume the erect posture for long intervals the peculiar postures begin to show and the symptoms which naturally result therefrom begin to develop.

The Congenital Visceroptotic or Carnivorous Type.

In the slender type, while the ideal standing position is the same as with the normal human, the natural position which will be assumed is one in which the general relationship of the parts is much disturbed (Figs. 4, 5 and 7). In this type the chest is flat, the usual standing position being with the chest at full expiration so that all breathing is done from the low point. The sternum is more nearly perpendicular, instead of the forward inclination as is normal. The costal border is inevitably narrower than in the normal type, the angle being usually under 45,° while at times in adult life it is so slight as to be hard to insert the fingers between the costal cartilages of the two sides. Because of this position of the ribs, the upper abdomen is naturally very small and the abdominal viscera must be in a different position from that seen in the normal type. The general shape of the abdominal cavity resembles the normal pear (Forbes, Williams[16]), large below and narrow above. (Fig. 17). Because of this the liver is displaced downward and it is usually rotated to the right, so that the right border is frequently below the crest of the ilium. The retro-

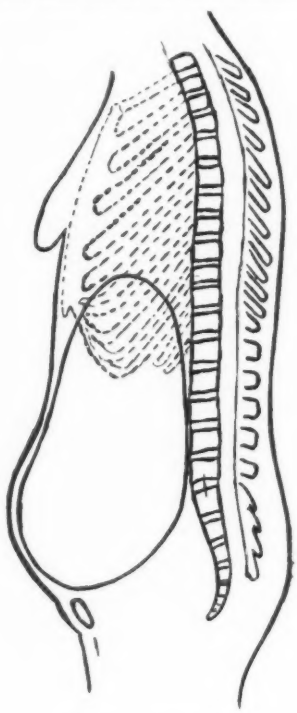

FIG. 17. (Williams.)

peritoneal fat is practically entirely lacking, with the result that the kidneys are usually mobile, the position occupied depending entirely upon the position assumed by the individual at the time of examination. Because of the absence of the retroperitoneal fat, the sympathetic ganglia and the large blood vessels must lie unprotected upon the anterior part of the spine, and it is not improbable that the changing positions of the organs, in the changing positions of the body, must at times lead to irritation or harmful pressure of these ganglia or vessels. The same thing is probably true of the adrenals, which being unprotected by fat pads, must be pressed upon and irritated more than is normal, this mechanical disturbance possibly explaining the peculiarity of the structure of the adrenal in this type of anatomy, which has been described by Dr. Bryant.

In this type of anatomy, since the ribs are lowered in front, the diaphragm must be lower than is normal, and this is increased by the drag of the loosely attached stomach, liver and colon. Because of this, the movement of the diaphragm in respiration must be less than normal, with, at times, practically no movement whatever showing in the Roentgenological study. The effect of this upon the breathing, as well as upon the circulation, especially in the large abdominal veins, to say nothing of the function of the other organs, must be very apparent.

The constant position assumed by this type is with the body inclined backward from the low lumbar region, making a sharper curve in the low spine than is normal, the spine above this point being relatively straight to the upper dorsal region, from which point it bends sharply forward to the midcervical region, where it bends backward again to make the upright position of the head possible. (Figs. 4 and 5). The general impression created by such a position when the individual is dressed is often that of being quite erect. In this position with the ribs low in front there is imperfect support for the shoulders, so that they are drooped forward (Figs 4, 5 and 18), the scapulae being rotated outward at the top, so that their long axis is much more oblique than normal. In this position the upper part of the scapulae does not rest against the ribs, and since the position exists in childhood when the bones are soft, the unsupported upper part usually is flexed forward, this flexed portion rubbing over the ribs when the shoulders are extended and gives rise to the sensation of crepitation so commonly felt. This irritation if continued naturally causes the pain so frequently referred to this region. With this general posture there are two regions of the spine, the low lumbar and the low or midcervical, in which the degree of hyperextension is greater than is normal, and since in hyperextension the posterior portions of the vertebrae, must be brought closer together than is normal, and since the foramina through which the nerve

FIG. 18.

The slender, congenital viscerotonic or carnivorous type, showing the forward position of the shoulder, with marked rotation of the scapula. In this position the head of the humerus is lowered and rotated inward so that it rests against the second rib, and the possibilities of crowding the vessels of the arm or the nerves of the arm leading to the circulatory disturbances, neuritis, or neuralgias of the arm, are evident.

roots pass are posterior to the point of motion, it is obvious that in this position the foramina must be narrowed. Since this position is the habitual one with this type it is not impossible that some of the little understood symptoms referred to the arms and legs (the parts naturally supplied with sensation and motor control from these two hyperextended regions) or some of the circulatory disturbances of the spinal cord may be due to this anatomic position.

With this hyperextension of the lumbar region and the backward inclination of the upper body, the longitudinal axis of the abdomen is naturally moved backward at the top, but at the same time the pelvis is tipped forward and downward (Figs. 4 and 5), so that its longitudinal axis is moved forward at the top (Fig. 19). The result of this is that the hips stick out at the back more than is normal and the angle formed by the intersection of the two axes, pelvis and abdomen, is less than is normal. In this position the pelvis has its forward inclination changed so that it at times is from 30° to 40° away from the so-called normal position. Naturally in this position the upper part of the sacrum, upon which the spine rests, is moved forward and downward and the weight of the body constantly tends to increase this forward position with resulting abnormal strain to the sacroiliac joints. This being the case, it is not surprising that it is in this type of anatomy that

FIG. 19.

Spine and pelvis, with left ilium removed, of slender or carnivorous type, showing the marked forward inclination of sacrum. The weight of body must be thrown upon the front of the sacrum, and naturally leads to sacro-iliac strain or displacement.

the strains and displacements of the sacro-iliac joints are most commonly seen.

With this general peculiarity of poise, the weight is naturally thrown upon the feet wrongly, so that the usual high arched foot is markedly pronated and the knees are sprung, usually with some knock knee.

In considering the mechanics of the viscera, naturally the same conditions as to position or mode of use of the body apply as were indicated with the normal human type. The special thing to be borne in mind in this slender type is that all the disturbances of poise are more easily harmful than would be true with the normal human or the more stockily built types. Particularly is it desirable that the positions assumed at night should be considered carefully. The absence of the posterior abdominal fat pads which fill up so much of the lateral spinal spaces naturally allows the loosely attached organs to drag backward much more than is possible in the normal type. This, together with the lack of protection of the ganglia and the blood vessels upon the front of the spine makes mechanical pressure more easily possible than occurs in the normal. It is not improbable that it is this drag or pressure upon these structures during the periods of complete relaxation in sleep that explains the common subnormal temperature, with the weak pulse, the low blood pressure, and the general lack of vitality which is usually present with this type of individual in the morning. For this reason it is particularly desirable that this type of individual should sleep either face downward or upon the side, so that the drag of the organs tends to pull away from the spine rather than to press backward upon the spine, as would be inevitable if the back position were assumed. The same possibility of backward pressure upon the ganglia or vessels is to be carefully borne in mind at times of operation upon this type, and the back position after operation be maintained as little as possible unless there is some support planned for the low back and loins.

With this type it should be remembered that good poise is possible (Fig. 20). The same child

FIG. 20.

The same case as Fig. 7, showing the possibility of the erect posture, but showing the marked hollow under the ribs as the result of the low position of the viscera.

as Fig. 7), but that it requires greater effort on the part of the individual and greater patience on the part of the helpers than would be required by the normal.

The Broad-Backed, Herbivorous Type.

With this type of anatomy the harmful disturbances of poise as a rule develop much later in life than with the slender type, because the shape of the spine and the general structure of the body withstand strain much longer than the more lightly built creature. In childhood the general posture is with the body erect and in good poise, not unlike that assumed or considered desirable in the normal type.

With this heavy type the disturbances of posture come about chiefly because of the abnormally large and heavy abdominal viscera. This leads to the backward inclination of the body as the weight of the abdomen increases, but since the formation of the low lumbar spine, with this type, does not allow of backward bending, the

inclination takes place either from the hips or at the dorso-lumbar juncture (Fig. 9). The strain produced upon the low back as the result of the posture may lead to marked sensitiveness at the lumbo-sacral juncture, due either to the crowding of the transverse processes against the top of the sacrum with the irritation of the bursae which so commonly lie between, or to the irritation of the articulations formed by the articular processes, or by the crowding together of the spinous processes with the pinching of the intraspinous ligament. Many of the cases of lumbago are undoubtedly to be explained by such strain.

In this type of anatomy the inclination of the pelvis is never forward more than is normal, but is apt to be thrown backward at the top since the pelvis moves with the low spine, and since the backward inclination usually takes place at the hip joints instead of in the lumbar spine. With such a backward tendency if one of the transverse processes is larger than the other, or if the lumbo sacral transverse articulation exists upon one side, or is more marked upon one side than the other, or if the articular processes are peculiar in shape, so that one is crescentic while the other is broad, it is obvious that with the backward inclination, the body is thrown to the side, with at times a marked lateral deformity. It is in this type that the so-called sciatic scoliosis is so often seen (Fig. 21).

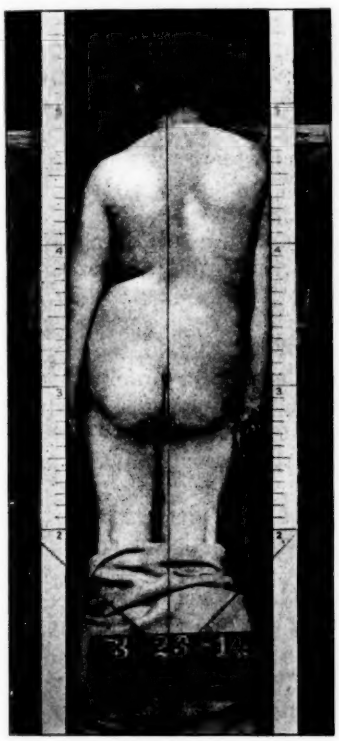

FIG. 21.

The broad backed, herbivorous type with the lumbo sacral transverse joint upon the left side, with strain and irritation of this joint, resulting in marked list of the body, with much pain in the left leg, and partial paralysis of the anterior thigh muscles, the so-called sciatic scoliosis.

The symptoms which would naturally result from this would be pain, not in the sacro-iliac joints as in the other type, but at the lumbo sacral juncture, and especially over the lumbo sacral transverse regions. The referred pain will be along the anterior crural nerve or the distribution of the nerves coming from the lumbo-sacral cord, that naturally being the nerve most commonly irritated as it passes under the transverse processes of the fifth lumbar vertebra.

With this type of anatomy the sternum is always carried high so that the chest is more rounded than in the normal human type and the diaphragm is held high, largely because of the bulky viscera which occupy the upper part of the abdomen. As years go on the heavy organs naturally lead to stretching of the abdominal wall so that the viscera occupy a lower level than is normal, but the degree of sag in this type is markedly less than is seen in the slender type with the loosely attached viscera. It should be remembered, however, that the degree of displacement is not that which determines the severity of the symptoms, and that at times the sag of an inch of an organ may produce more serious difficulty than the sag of several inches.

As the organs sag downward, the ribs, while lowered somewhat, are naturally flared at the bottom because of the high attachment of the organs and the fact that the amount of downward displacement that is possible with them is relatively slight. The antero-posterior diameter of the upper abdomen in this type is relatively but little changed by the drooped position over that which would exist when the body is fully erect. On the other hand, in the slender type the antero-posterior diameter of the upper abdomen is much less when the body is drooped than when fully erect. The costal border in this heavy type of anatomy is always broad and usually is more than 90° rather than less.

With the heavy type the positions assumed when sitting are as a rule much less serious than with the slender type, since the structure of the body as a whole makes the droop much less marked, and since in the sitting position the lower abdomen is partly supported on the upper thigh and the downward drag of the organs thereby somewhat lessened.

The position at night is naturally of importance, and with this type the position upon the face would cause so much backward pressure upon the viscera and structures at the back of the abdomen that probably harm would result. The back or the side position is naturally the best. Since the lumbo sacral region is the part most commonly strained in this type of anatomy, the back ache in this type or the referred leg pains are usually relieved by recumbency, the reverse of this being true with the slender type, in which with the sacral strain the day time is the time of greatest ease, the night being the time of greatest discomfort.

Deductions.

If that which is here stated is correct, and verification of the statements should not be difficult, it means, in the first place, that the teaching and study of anatomy should not only have to do with the normal type, but that the other types should be given similar recognition. The need of this broader anatomic training must be obvious when one appreciates how rarely the physician is consulted by the person having the anatomy as it is commonly taught.

It means, also, that in the study of physiology the elements which are peculiar to each type should be investigated and appreciated. When the elements which are easy of study, such as the gastric secretions, the blood pressure, pulse rate, temperature, etc., vary so markedly with the different types there must be similar and perhaps more important variations in the other features which are part of our physiology. To study all individuals from the same point of view must lead to much confusion and explains in part the different reports which are made of seemingly similar investigation. With the types so widely different it is not difficult to believe that there is wide variation in the function of the different parts. The physiology as a whole should be studied with this in mind. The temperature, blood pressure, and other elements of this sort should be observed, but also the problems, such as the mechanics and peristalsis of the stomach and bowel, with the time involved in the passage of food from one part to the other. These must vary, and each type should be studied by itself, since it is obvious that study of one type would be of very little assistance in interpreting the symptoms or functions of another. This must be particularly true of the chemical observations and it must be obvious that in beings having so much the makeup of creatures so widely different as the carnivora and the herbivora there is probably enough of difference in the body metabolism as to make such studies of uncertain value unless the anatomic type of the creature studied is stated.

It means that probably in this difference in types is to be found the explanation of the varying effects of the same diet upon groups of individuals. That one becomes fat while the other remains thin, or that one suffers distress while the other thrives upon the same food must be due to something other than the food. The fact with which even the laity is familiar, that meat in gout is harmful becomes a matter of interest when it is realized that the herbivorous type is the one that is subject to gout. Also the fact that a few years ago so many of the nervous invalids were helped by the diet of chopped red meat and hot water of Dr. Salisbury becomes interesting, since this type of patient is almost always of the carnivorous type. It apparently means that while all human beings have elements within them which make possible the digestion of the different kinds of food, some are digested with greater ease than others, and that this fact at times is of the greatest importance in the interpretation of symptoms and their treatment.

It means in the medical and surgical treatment of our patients that the symptoms should be interpreted in relation to that which is normal for the special type of anatomy represented in our patient, and that the mechanical conditions present in such a type should be carefully studied. A blood pressure, for instance, that would be normal for one type might be dangerously high or dangerously low for the other type. A disturbance of circulation in the legs, the varicose veins, or in the lower abdominal structures, varicocele, etc., should be thought of not as a local condition, but investigation at once started to see what is pressing upon or interfering with the veins above. Correction of sagging organs, or the removal of some pelvic tumor may wholly relieve the mechanical interference with the veins with entire relief to the conditions below. The treatment of the vein itself, since it is treating a symptom only, must necessarily be unsatisfactory.

In thoracic conditions, it means that not only should the disease of the organ itself be considered, but the conditions under which the special organ works be also considered. In the slender type, since the chest is used at full expiration and since the movements of the diaphragm are also restricted, the lungs should not be expected to become strong or to work rightly until the conditions upon which the proper action of the lungs depends are made possible. With the tuberculous patient, which almost always, is of this type, it should be made a part of our work to see that the body is so used and supported that the chest is raised, and the drag upon the diaphragm removed, so that the normal rhythm of respiration is possible, as much as to see that the patient is given fresh air. The air cannot get into the lungs unless these mechanical elements are recognized. The same is true of the heart action, if the chest is low, and the diaphragm depressed so that the suspensory ligament, which is the pericardium, is stretched. Not only must the heart labor at a disadvantage from its immediate environment, but the interference with the diaphragmatic action must be of much importance, and for only one illustration, the unloading of the abdominal veins, which is dependent so much upon the movement of the diaphragm, must be disturbed. When the mechanics of the heart action is considered one is not surprised to find such work as the article by M. Herz[10] upon "Interference with the Heart Action by Stooping," reported.

In the abdominal conditions it means that they should be given proper anatomic and mechanistic consideration. It may be that the individual is simply receiving food that is designed for an entirely different type or it may be that the organ or organs are so mechanically

out of adjustment that the normal function is impossible. The imperfect action of the liver or the formation of gall stones may be due to mechanical interference with the structures upon which the function depends. The fact that gall stones so commonly are found in the heavy type, while the cystic bladder is so commonly seen in the slender type, probably means something which has both a physiologic and a mechanistic significance. The inability of the stomach to empty itself, or the variations in the character of its secretions, may be due to the position of the organ itself or to interference with the vessels or nerves supplying it. The function of the bowel, both large and small, may be good or ill in proportion as its structure is normal or its position is correct. Kinks may occur, but it should be remembered that while some are serious and require surgical interference, that many times if the mechanistic features are appreciated, that the kink can easily be released, while if surgery is employed, the special kink may be removed but the structural formation is such that other kinks are possible, with a greater probability of their developing because of the postoperative adhesions which are sure to be added to the structural peculiarities. The ulcers of the stomach or duodenum may be due to improper pressure, as has been fully described by Codman.[11]

It means in the part of the study in which the x-ray is used, that the difference in the position of the viscera that should be present when the body is recumbent upon the side or back, as well as that which should exist when the body is erect, should be fully understood.

It means that with the disturbances of the kidneys, that those which are mobile should be expected as a part of the anatomy of the slender type, and that attempted suture of such organs can hardly be successful unless there is much postural training, since all of the mechanics tend to redisplace them. In the so-called diseases of the kidneys it should be remembered that albumen and the other abnormal elements are only symptoms of a condition, and may be due to improper demand put upon them by the wrong food, or may be due to some purely mechanical condition. When the anatomic features are considered as well as all the mechanistic features one is not surprised to find such work as Scholder and Weith[12] carried on at Lausanne, showing that in 1254 school children in over 20% they were able to obtain albuminuria by putting the children in certain definite postures. Similar work by Fischl and E. Popper[13] upon albuminuria is of additional suggestiveness.

With the presence of sugar in the urine it is not impossible that as well as improper food the pressure of the mobile, heavy organs upon the pancreas, or its blood vessels, may be distinctly causative of the symptom. Certain it is that when one has seen cases in which after most careful dieting the sugar has persisted and then after supporting the organs properly the sugar has wholly disappeared, it is hard to believe that the mechanistic elements are not of some importance. It should be remembered that the diabetic is almost always the heavy type and that sugar is rarely present in the slender type, except occasionally in childhood, and then only in an evanescent manner. In this heavy type the organs are heavy and are placed in the upper abdomen, while in the slender type they are much lower. One cannot help wondering if the heavy organs by sagging may not crowd the pancreas or the sympathetic ganglia of that region with etiological importance. The supports or postures which are used should be planned with reference to this.

It means in considering the blood diseases, especially the profound anemias, which cannot be explained in other ways, that the position of the spleen or the effect which other organs may have upon its function should be considered. The ease with which the blood supply of this organ could be shut off or interfered with as the other organs move about, must be apparent, while the possibility of the spleen itself being displaced or its vessels twisted, must be equally evident as we come more and more to understand the mobility of the various viscera. The fact that the blood recovery has taken place rapidly after mechanical treatment has been applied, after the previous continuance of the symptoms in spite of the ordinary medical measures, makes it seem probable that to make it possible for the organ to work, is perhaps as important a part of treatment as any other.

It means that with the disturbances of the other abdominal organs that both the anatomic and the mechanistic features should be considered; that the stomach and liver cannot work rightly if the ribs are contracted and narrowed so that there is practically no subdiaphragmatic space; that the pelvic organs cannot work rightly and must be congested if the loose abdominal organs are crowded into the lower abdomen and pelvis.

It means that in studying the mental diseases or the nervous disorders, since with the former the acute conditions are usually seen in the slender or carnivorous type, while the chronic or degenerative conditions are usually seen in the heavy type, in which the arteriosclerotic changes are common, and since also the functional nervous conditions are usually seen in the slender type, that probably the anatomic form is of distinct importance in the understanding of such conditions. It is not improbable that the acquired characteristics, with the mechanical disturbance of the physiology which is to be expected under such conditions, may be of distinct etiological importance.

With epilepsy, the recent literature so strongly suggests that many of the cases are due to gastro-intestinal derangements that it is not un-

reasonable to wonder if by studying the anatomic condition fully, we may not find suggestions that will be helpful in our treatment. From the mechanistic point of view when occasionally one sees the convulsions stop instantly by the mere change of position to that in which there would be less pressure of the viscera upon the ganglia and vessels in the posterior part of the upper abdomen, it makes one question if these mechanistic elements are not part of the complex condition that shows itself in the convulsion.

It means that in studying the disturbances of the internal glands that since the hyper-thyroid conditions are usually seen in the slender type, while the hypo-thyroid conditions so commonly occur in the heavy type, it is possible that in the better understanding of the physiology of the whole body with such an anatomic basis, our treatment of these conditions may be more satisfactory.

It means that in studying such local conditions as the disturbances of the eye, it should be appreciated that the circulation in the eye may be so materially changed by postures which interfere with the blood flow to the head that the shape of the eye is changed, the near sighted eye resulting (Howe[14]). In such diseases as cataract, since these commonly develop in the heavy or herbivorous type, as is true of the hypertrophic arthritis, perhaps there is something else to be done other than wait for suitable time for operation. With such understanding of the anatomic types and their physiologic potentials, one is encouraged in such hope by work such as is reported by Connor.[15]

With some of the other inflammatory conditions of the eye it is not improbable that the function of the ophthalmologist will extend much farther than the application of the local remedies, but that a kink in the bowel leading to an eye infection or the interference with the circulation in the eye as a result of some local mechanical feature may be the real cause of the trouble and that his greatest function is seeing that these conditions are corrected.

It means, in obstetrical work, that the different types have very different potentials. The slender type of woman is as a rule in better health than usual during pregnancy, after passing the first month or two, undoubtedly in part due to the support which the abdominal organs receive from the enlarging uterus. The labor also is usually easy with this type, as one would expect from the small amount of pelvic fat, the slender or small fibred pelvic muscles, and the slender pelvis with the loose pelvic joints. In the last month of pregnancy the sacral pain with frequent sciatica is easily understood by the form of the pelvic joints, and the quick relief from the pelvic joint strapping is not surprising. The possibility of increasing the diameters of the pelvis in this type and thereby assisting at the time of labor by simply manipulating the sacrum should be realized, as well as the greater need of pelvic support, by swathe or strapping while the involution is going on. Also with this type, to maintain the higher position of the abdominal organs, the upright position should not be assumed until the abdominal wall has regained its proper tone and suitable corsets, to give low abdominal support, are fitted. It should be appreciated that conception with this type occurs easily and large families are common. With the heavy type childbearing is a more difficult matter, conception occurs less frequently, and the pregnancy is usually a time of much discomfort, with distressing back ache due partly to the relaxing of the broadly formed sacro-iliac joints and partly to the strain of the broadly formed lumbo-sacral joint, due to the changing poise. The labor is usually difficult, partly because of the general lack of flexibility of the pelvic girdle and the low back. It is with this type that back ache with referred leg pains often last for long after confinement because of the chronic joint strain.

With the normal human type the obstetrical condition is midway between these two types. It is neither as easy as with the slender nor as hard as with the heavy type.

It means that with the orthopedic conditions not only should the special joint or part be protected, but the type of the being as a whole should be studied and the function of the different parts assisted as much as possible. In the fitting of apparatus this is particularly important, and anything that interferes materially with the visceral function or with the proper development of the body as a whole should be most carefully avoided. This should be especially considered in some of the newer methods for the treatment of lateral curvature.

It means that, in the treatment of the common weak foot conditions, cure can hardly be expected unless the elements of faulty mechanics which have led to the foot strain are corrected. Of these, among the seemingly remote causes of strain, it should be remembered that the abnormal drag of the abdominal viscera will necessarily throw the body out of poise, so that the balance of the feet will be disturbed. It means that in the treatment of the common strains of the sacro-iliac joints that cure is not to be expected unless the abnormal forward inclination of the pelvis which has led to these strains is overcome. It means that in the treatment of the chronic joint diseases that the treatment of the local condition is only part of the problem. The joint symptoms are usually due to some systemic disturbance. To find the primal cause of the difficulty and see that that is corrected is naturally the most important function of the orthopedist.

It means, and this is apparently the most sobering phase of the subject, that as the result of the splendid work of our profession in preventive medicine, the slender type, which for-

merly because of its low resistance added so much to the mortality of infancy and childhood, is now being saved. It means also that with this type growth without proper guidance inevitably produces a still weaker physique, with drooped figure, narrow chest, etc., etc. These acquired characteristics added to the congenital form accentuate the congenital elements to such an extent that they are much more sure of being present in the following generation, and it becomes a mere matter of biology to see that such elements which represent physical instability will become more and more marked in the subsequent generations. This together with the fact that the slender type is the most prolific, makes evident that the stock from which the race is recruited will become steadily less strong. That this is actually taking place one has only to study any considerable group of school children of the present time to see how commonly the slender type is found. That this was not formerly the case is suggested, at least, by the study of the engravings of groups of individuals, such as were so commonly made from 50 to 100 years ago, in which the broad or round faced type is almost the only one shown. This is, of course, equally true at the present time in those countries in which modern medicine has exerted but little influence, and consequently the infant or child mortality is extremely high. The similarity in the form of the Oriental is apparently to be explained largely by this, as is true also of the form of the pure African. The slender type is not often seen among these races.

Since with the work of our profession and the general development of our civilization, the structure of the human family is being modified, it certainly behooves us to see that the modification is beneficial and not harmful. For this reason the great opportunity for our profession consists in not only saving the lives of those who are physically delicate, but in seeing that they are developed into stronger and more healthy individuals.

Similarly this is the great opportunity and responsibility for the educator. The slender child, if guided and trained rightly, becomes the agile, quick moving, quick thinking type of individual. To obtain such a development means most constant perseverance with the education and training of such a child, and this training should begin in the lowest grades of our school system, insistance being put always upon poise with its resulting efficiency. If the proper exercises are started in the lower grades and are increased in vigor and complexity as the child progresses, the children can be brought up to adult life with very different physique from that which is so commonly seen at the present day. One of the most serious phases of the educational aspect of the problem is that since this slender type is sensitively and nervously organized, with distinct nervous instability, intellectual training must necessarily increase this instability, unless with the intellectual training the training of the body is insisted upon so that the proper physical support is given for the mental development. If education is approached in this manner it is a blessing, but if the intellectual aspect alone is held it must, in so far as this slender type is concerned, be harmful both to the individual and to the race.

One would certainly be a pessimist of the most profound type if he felt that the splendid work of our profession along preventive medical lines was a curse to the race by preserving the lives of the slender or delicate physical type, which Nature, in keeping with the law of the survival of the fittest, would have thrown off, or that the splendid work of the school and college is also harmful to the race by accentuating qualities of weakness; but such must be the fact, unless something else is added to the mere saving of the lives and to the common system of education as it exists today. If the physician and the teacher recognize these facts and apply the natural principles for the proper development of these individuals, the result must be inevitable—a stronger and finer race.

What higher incentive can there be for work than that which benefits the individual and at the same time by helping him gradually removes the weaker elements, which if perpetuated would surely lower the vitality of the race as a whole? The free will of choice with which man is endowed and upon which his moral development depends seems to find a similar responsibility in the development of a better and better creature along physical lines, and this development, as is true with the other, follows simple and understood laws. What greater incentive for one's best endeavor could a man desire than to become conscious of the greatness of this opportunity? In the moral choice man is given great responsibility and in the physical the responsibility is none the less great, unless the development of the human family is to be governed by the same law of survival of the fittest and natural selection which has governed the development of the lower forms of life. That man has for his future something better than these laws would make possible, everyone must feel who has thought at all beyond the needs of the day, and in the hope of stimulating thought and activities along these lines this contribution is presented.

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Original Articles.

SYPHILIS AND LUNG DISEASE.*

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IN the Schorstein Lecture[1] Osler, with characteristic skill, paints a picture of the harvest reaped by syphilis, and sets down indisputably in cold figures the high position it occupies in the "hierarchy of the infections." For the year 1907, he places its mortality in England and Wales at between six and seven thousand, or about one in eighty deaths, and this does not take into consideration the unestimated and very large number of still births. In short, he reckons syphilis as sixth in the list of diseases due to specific germs, although in the registrar-general's report for 1907, only 1658 deaths are charged to the spirochete.

Following Osler's line of reasoning, let us turn to the vital statistics of Massachusetts for the year 1912 and see if we can get some idea of the prevalence of syphilis in this Commonwealth. If we expect the figures to show it as a killing disease, we shall be disappointed, for the spirochete is held responsible for only 113 deaths.[2] Remembering, however, that syphilis can kill in three ways and at three different periods, we can readily see that these figures by no means tell the tale. Of the 3188 still births, half at least may be credited to the spirochete, which, as Osler truly says, "collects a heavy toll of the unborn." The 113 given deaths represent his second group, and of these, 78 were under one year of age and succumbed probably to the direct lesions of the disease. "But the worm that never dieth and the fire that is never quenched express in simile," as he says, "the only too frequent history of syphilitic infection"—well chosen words we must admit, when we consider the third great group.

This includes the 231 who died of general paralysis of the insane; the 87 who died of tabes; one-half at least of the 372 labeled paralysis without specified cause; nearly all of the 56 recorded as softening of the brain; one-tenth at least of the 3496 who died of cerebral hemorrhage, nearly 500 of whom were between the ages of twenty and fifty; one-tenth perhaps of those 1979 under the heading of diseases of the arteries (atheroma, aneurysm, etc.), not to mention some of the 4610 organic diseases of the heart, a few of the 388 cirrhoses and other diseases of the liver, and a few of the 478 suicides. In round numbers, if we include still-births, we might place its mortality at 3000, or about one in every eighteen deaths, making its record of fatality fall behind only tuberculosis, pneumonia and cancer. Call this excessive if you will, and for the sake of conservatism divide the mortality by two. Yet it still remains high enough to attract the attention of the doubter.

My purpose in presenting these figures is simply to forestall the criticism that one interested in this disease can see nothing else, and also to give some food for thought to those who rather boastfully say that they never come across a case of syphilis. But my special topic tonight is a consideration of this disease in its relation to lung disease, a subject that has not received at the hands of American writers the attention commensurate with its importance. Whether or not syphilis of the lung is as infrequent as some believe is a debatable question. There are those who say that it is not of such rare occurrence and that it is often overlooked because it is difficult to distinguish between this lesion of the lung and pulmonary tuberculosis, not only at the bedside, but in the pathological laboratory. Stengel[3] says that there is no disease in which it is more necessary to carefully weigh the pathological findings with the clinical history before giving an opinion. The finding of the tubercle bacilli is the only absolutely certain point of difference and even this does not preclude the possibility of associated syphilis. Pulmonary tuberculosis is so common and syphilis thought to be so rare that it is not at all improbable that some of these cases slip by with a diagnosis of tuberculosis. Moreover, many cases of supposed phthisis give such a typical history and show such characteristic signs of the disease that it does not seem necessary to examine the sputum. Even if the bacilli are not found after several examinations, no change in the diagnosis is made.

* Read before the Charlestown Medical Society, Feb. 15, 1915.

The same line of argument is used in the autopsy room. The condition is so much more likely to be tubercular than luetic that it is almost always placed in the former class unless syphilitic lesions of a pronounced character are found in other organs.[4]

In reviewing the literature before the discovery of the tubercle bacillus, we find syphilitic phthisis mentioned by many authors. Morgagni[5] makes note of a phthisis, *a lue venerea*, and of its cure by anti-syphilitic treatment. Virchow[6] insisted that contributions on the subject by Graves, Stokes, Laennec and Yvaren were of little worth since they lacked anatomical confirmation. In 1862, Virchow himself had a case which clinically and later at autopsy showed lung syphilis. The costal pleura was thickly seeded with yellowish miliary and larger flattened areas of thickening, most of which were grouped about a projecting flattened scar-like area with radiating margins. In the lungs were multiple nodules, the largest from the size of a pea to the size of a walnut, with softened centres often forming bronchiectatic cavities. These pleural and pulmonary lesions in association with typical constitutional syphilis, served to recall to Virchow a few cases of similar lesions in congenitally syphilitic infants. In these cases nodules were found in the pleura and in the lung substance around the bronchi. The so-called white hepatization of the still-born first described by Virchow in 1847, was shown by Hecker in 1854 to be due to syphilis.

In acquired syphilis there is a second or interstitial form as distinguished from the one with multiple gummata described above. In this form, met with post mortem in old syphilitic subjects, the fibrous tissue is seen most commonly and abundantly at the hilus of the lung, whence it may extend as dense bands into the interior along the air tubes and blood vessels. It may be quite general and lead to extensive pulmonary fibrosis and shrinkage, or it may occur in scattered areas. The disease is usually unilateral and there are commonly also dense, firm adhesions in the pleural cavity. This interstitial hyperplasia displays no characteristics that serve to distinguish it from fibrosis due to tuberculosis, unless it be its tendency to be confined to but one lung, and to occupy the middle parts of the organ. It is this difficulty probably in distinguishing between the two that makes our autopsy records show so few cases of specific lung disease. This will, perhaps, explain why Osler observed only twelve cases in twenty-eight hundred autopsies at Johns Hopkins, and why not a single case was observed in three thousand autopsies at the Massachusetts General Hospital.

It is to clinical evidence then that we must turn, for since syphilis of the lung is a curable condition, it is not strange that we find so little evidence of it at autopsy. Fournier lectured on it in 1876, and in 1877[7] Porter read the first paper on the subject in this country. Satterwaithe, in 1891, in the Boston Medical and Surgical Journal, reported some cases and expressed the opinion that lung syphilis was greatly underestimated and even unknown to many syphilographers. In 1891[8] also, Councilman reported two cases of lung syphilis demonstrated at autopsy in which the diagnosis had not been definitely made before death. In this article, he says that he has found it to be comparatively rare, although he adds that it is difficult to see why this should be so. In England, France, and occasionally in this country many cases of clinical luetic lung disease have been reported. In most instances they were clinically identical with consumption in its various stages, were at first diagnosed and treated as such, but finally, on account of repeated failures to find the bacilli, were recognized and treated as syphilis with happy results. For example, Dr. L. Brown in *Johns Hopkins Bulletin*, April, 1914, reports a number of such cases under the heading of "Some Errors in the Diagnosis of Pulmonary Tuberculosis." Brown of St. Louis reported several cases May, 1914.[9] Burnham[10] of Boston reported the case of a woman who was admitted to one of our state sanatoria with the diagnosis of advanced phthisis. After a month or so, she left the sanatorium against advice, was afterwards labeled second and third stage tuberculosis at various clinics, and yet all the while the sputum was negative. Burnham, suspecting her true condition, had the blood examined with a positive result, and under specific treatment her recovery was rapid.

Three years ago I saw a young man twenty-six years of age, with a history of a hard sore about a year previous. He was twenty-five pounds under weight, was pale and had a mouth full of sores. He had a severe cough and marked dyspnea. His story was that he was never able to stand much treatment with mercury, but had progressed fairly well until four months before I saw him, when he developed a hard cough. His appetite became very poor, he began to lose weight, and his stomach could not stand the mercury which he had been taking by mouth. Discouraged, he stopped all treatment and began to drink. Mucous patches appeared in his mouth and around his anus; he had bloody sputum and night sweats. Lung examination showed both tops filled with sibilant râles and a percussion note that was none too good. At the time I thought that I was dealing with a case of phthisis complicated with syphilis and gave a rather discouraging prognosis to his friends. His sputum was not examined, as on the following day I gave him an intravenous injection of salvarsan which caused an immediate change for the better. A month later I hardly knew him, so rapid had been his gain in weight. Not long ago I heard from him from Philadelphia, where he now lives. He feels perfectly well and is still taking specific treatment at intervals. What he was suffering from was probably a

syphilitic tracheo-bronchitis which, had it gone untreated, would, I believe, have soon developed into a rapidly advancing case of pulmonary tuberculosis. It is interesting to note that in this case the patient had an idiosyncrasy to mercury, and the rapidity with which he cleared was a tribute to the efficacy of salvarsan.

Some time ago, in my work as an examiner, I saw a man with a solid left base, evidently an old fibroid condition. He was also rather wheezy with a chronic bronchitis. Although pale, he looked fairly well and apparently had not lost any weight. Over his left scapula was a small, suspicious-looking serpiginous lesion. He denied syphilis and was very indignant when I told him that I would have to reject him. Of course I was unable to follow up this case, but I feel that I am not unreasonable when I say that his was probably a clinical case of lung syphilis.

Not long ago I was consulted by a stout, healthy-looking man of fifty, on whom a diagnosis of second stage phthisis had been made. He had a cough, slight loss of weight and a suspicious condition at the tops of both lungs. His cough was one of those irritating ones, out of all proportion to the physical signs. In reply to my routine question about syphilis he promptly replied that he had what he termed "syph" twenty-five years ago, but said that he had taken treatment for five years and supposed that he was cured. I was interested enough to take some blood for a Wassermann test, which proved to be strongly positive. He was given three intravenous injections of neosalvarsan and later put through a course of mercury intramuscularly. Then he was given mixed treatment. After four months it is interesting to note that he still went strongly positive. Clinically the result was all that could be hoped for. His lung condition cleared and he felt better than he ever did before. Here, again, I believe that I was dealing with a case of clinical syphilitic phthisis that might have found its way to a tuberculosis sanatorium.

Osler reports the case of a man of twenty-seven admitted in April, 1902, who for years had cough and bloody expectoration and who died of severe hemoptysis. Bacilli were never found in the sputum. There were extensive caseous gummata throughout both lungs, with much fibrous thickening, and in the lower lobe of the right lung a cavity three by five centimeters in diameter, on the wall of which a branch of the pulmonary artery was eroded.

These are only a few of a number of cases either clinical or pathological, that might be mentioned. The point that I wish to emphasize is that their occurrence is an established fact that cannot be lightly set aside.

Fully as much neglected as luetic phthisis is a more frequent condition, the association of syphilis as a general disease and pulmonary tuberculosis. Occasionally we read of striking improvement in pulmonary tuberculosis by the intramuscular administration of the succinimide of mercury. It seems reasonable to suppose that these are cases of phthisis complicated with syphilis. We hear very little of lues as a predisposing factor in pulmonary tuberculosis. Fowler and Godlee in their book on Diseases of the Lungs (1898) put due emphasis on the fact that syphilis, by lowering the resistance, may predispose to consumption. They state that it has been shown by Hoeksinger (1894) that the virus of syphilis and tuberculosis may be jointly transmitted from parent to offspring. They cite his cases of three infants suffering from congenital syphilis and presenting symptoms of lung infiltration in whom the pulmonary disease was found post mortem to be due to tuberculosis and not to syphilis. The bacilli were found in the lungs in all three cases. Fournier remarks, "I have already seen a number of patients become tuberculous in whom syphilis had powerfully exerted its depressing influence." "Again," he says, "from my own personal experience, as well as from what has been said on this subject by the highest authorities, I do not hesitate to inscribe syphilis in the etiological chapter of pulmonary tuberculosis."

Sergent[11] of Paris, who has made a special study of the association of these two diseases, which he has embodied in a monograph on the subject, believes that syphilis is a common predisposing cause of tuberculosis, and that it prepares a soil (terrain) favorable to the growth of the tubercle bacilli, and that this special soil is transmissible to the descendants. The active consumptive, he says, receives a mortal blow when he contracts syphilis. With the inactive case the outlook is brighter. When a syphilitic becomes tuberculous, the prognosis varies according as to when he contracts his phthisis. If it is in the tertiary stage it is always inactive or benign. He makes the interesting suggestion that syphilis may be at the bottom of inactive tuberculosis in the form of emphysema. He concludes his study of these associated conditions by stating that he cannot always agree with the old idea that lues and consumption combined constitute the most formidable of diseases. We must consider in each case the soil, the malignity of the diathesis and the response to proper treatment before giving up the case as hopeless.

Guerin,[12] of Bordeaux, who has also labored in this particular field, warns us to look always for tuberculosis in the presence of syphilis. Gouget[13] of Paris reports a case of a woman with cutaneous specific lesions and definite signs in the right lung, with bacilli in the sputum. Under mercury her skin lesions disappeared and the lung process became inactive. Like Sergent, he feels that syphilis is a favorite soil for the development of tuberculosis, and in the case of the consumptive who became syphilitic, he lays down the following rules: If the lung is active the process rapidly advances and death soon intervenes. If it is inactive the

chances are better. In the case of the luetic who becomes tubercular, he, too, says that if the tuberculosis is acquired in the secondary stage it advances rapidly, and our prognosis should always be grave. In the tertiary stage, the patient is predisposed to a fibrous evolution of his tubercular process, thanks perhaps to his arterial hypertension. The serious cases belong to secondary syphilis and active tuberculosis.

Some observations on this subject by Mr. D'Arcy Power[14] are also interesting. Children and adults with the taint of inherited syphilis often show signs of tubercular joint disease in the form of a gummatous synovitis, which does not improve beyond a certain point under antisyphilitic remedies. In young adults born of specific parents an attack of pneumonia or other infectious disease may be followed by signs of syphilitic inflammation. The syphilitic lesions thus manifested may become tubercular and the patient die of tuberculosis. Old persons who have acquired syphilis many years previous show a tendency to be attacked by senile tuberculosis.

Enough has been said to show the magnitude and the importance of this subject. It is a question that the tuberculosis expert cannot disregard. No great public movement in preventive medicine has fallen into such a rut on the scientific side as the fight against consumption. In a spirit of suggestion, therefore, rather than criticism, I recommend to the leaders in this work a field of investigation that is worthy of a live effort.

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RABIES IN CHINA.

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Rabies as a distinct and commonly recognized disease entity, has a history in China running back into the dim annals of the nation's youth. Chinese nosological writings are characteristically indefinite, and because the so-called scientific method is not employed, their conclusions are often peculiarly naive and devoid of reason. In spite of this fundamental defect, however, the Chinese observation of natural phenomena is often surprisingly accurate and circumstantial, even though their deductions therefrom may be far from the fact. Thus in the case of rabies, the absence of the scientific method has prevented their following up the data accepted as fact, the fruit of their own observation.

From remote times rabies in man has been known in China and has been connected with the same disease in dogs. Apparently other animals, domestic or wild, have not been considered subject to the disease, but in dogs it has been described very definitely. It is called the "mad dog disease" or "the serious disease of lower animals." Here, as in other matters, there is undoubtedly a variety of belief in different parts of China, but the data presented may be taken as typical and accurate for Changsha. Strangely enough, no word corresponding to "hydrophobia" is known, nor has any reference been found of observation of aversion to water on the part of rabid dogs or men.

In the time of Chun Tzu, who was a contemporary of Confucius, it is recorded that a mad dog attacked the people of Sung, this being a dynastic name applied at that time to the Chinese Empire. The people were terrified and banded together to kill the dog, but it ran away and made its escape. This shows, so the Chinese say, that the mad dog was as greatly feared at that early time as it is today. Rabies in human beings is considered to be very difficult to cure and often incurable. Men more frequently contract it than women because men more often attack mad dogs and are thus exposed to infection. In killing or attacking a mad dog it is held that care must be exercised because the poison may be transmitted from the dog to a stick by the saliva, and from the stick to man by contact. The same is noted with reference to clothing and it is held by some that a man may become infected merely by having his stick or his clothes bitten by a mad dog. The infectivity of the saliva is clearly recognized. For this reason it is recommended that a certain kind of stick alone be used, a variety of black bamboo. This is semi-traditional but has basis in reason in that such a stick is so smooth and hard that a dog cannot bite it and the saliva is not retained.

The diagnosis of rabies in man or dog is made by the Chinese practitioner on the following points. By striking a brass gong or pan sharply before the suspect, extreme fear is produced and sometimes convulsions. The same follows vigorous fanning with a palm fan. Another diagnostic method in man is to feed some yellow or black beans. If the man finds the taste sweet and pleasant and enjoys the eating, it is an evident sign of madness, but if the taste seems bitter and there is no pleasure in the eating, the poison of madness is not present. Again, madness may be recognized in man by rubbing his chest with a cash. If red streaks appear, it is a

positive sign. The growth of red hair is another sign.

The essential cause of the disease is laid to a disturbed relation of the gases or atmosphere of the body, resulting in a poisoning of the blood. The incubation or latent period of the disease is observed to be quite variable and often delayed. The poison may remain inactive in a man's body for seven days after being bitten or for seven times seven days, or even for one hundred days, before hydrophobia develops. The length of the incubation period depends on the strength and health of the man and the virulence of the poison. Some say that a man with rabies cannot live more than one hundred days, but that if he hears gun-firing, firecrackers or other loud, harsh noises, he may go into convulsions and die in great pain at once. With the development of the disease the patient experiences a severe cutting pain through the heart and is apt to lose consciousness. His strength is greatly increased, and in his fury he rages, tears, bites and howls just as does the mad dog. The urine and stools are supposed to be suppressed, and this is accompanied by severe pain in the penis, anus and around the waist. The victim tears off his clothing, scratches in the earth, bites everything near him, including his own hands, and in a few hours dies. The sufferings are described as fearful.

Various etiological factors are designated to account for madness in dogs. The following have been especially noted:—

1. In the winter venomous snakes and poisonous reptiles hibernate in caves and holes in the ground, for fear of the cold weather. While the surface of the earth is cold there is still warmth underneath. With the coming of spring these reptiles gradually become reanimated and crawl out of their places of concealment, into the air. During their long sleep, poisonous gases and noxious vapors have accumulated in them, and when they first begin to breathe again these are given off at the mouth of the cave or hole. Dogs smell at these holes and inhale the poisonous vapors, which go through the lungs to the brain and cause madness. The disease in the dog is thus located in the brain.

2. Madness is transmitted from one dog to other dogs, by bites, through the medium of infected saliva.

3. It is said that dogs become mad after eating toads from ponds or pools in the spring of the year.

4. Dogs become mad also from licking up the exuding sap from trees and bushes cut off in the spring when the sap is beginning to flow.

5. When, from some such cause as mentioned, dogs get the poison of rabies in their system, the virus may still not be strong enough to cause madness, but the progeny of such a dog may by inheritance suffer from rabies.

6. In the putrefying bodies of dogs dead from rabies there is engendered an infective agent, microbic or vaporous, which may transmit the disease to other dogs smelling the carcass.

7. Mad dogs discharge on the ground as they run, a strong and venomous fluid, which transmits the disease to other dogs smelling it or licking it up.

8. One interesting theory is that from eating too hot food a dog may develop a great internal heat which causes madness. If by any means this internal heat can be alleviated, the disease is cured.

9. There is an ancient tradition in Hunan that rabies in man is due to the virus from the bite of a mad dog. This virus in the course of 21 days in a man or 14 days in a woman, engenders in the stomach a small puppy which rapidly grows, and by its biting, scratching and growling is responsible for the symptoms observed in the victim.

Most of these causes of madness in dogs are only operative in the spring of the year. Therefore it is considered that dogs should receive special care and protection in the spring. Mad dogs are often difficult to recognize, but can usually be recognized by the fact that they hang down their ears, head, and tail, that they have red eyes, run very fast and far, and that they have "hard strong necks." Then, too, as stated above, they are in terror before a sounding brass gong or if fanned with a palm fan. If the poison penetrates to the heart, it will affect the tongue, which hangs out. If it reaches the liver, vision is lost. In the stomach it results in abundant and poisonous saliva. In the lungs it causes loss of voice. In the lower part of the body it makes the tail hang down between the legs. In man rabies is said to cause the growth of red hair, which must be pulled out by the root if a cure is to be effected.

Among the Chinese physicians of the native school many remedies are in vogue, many of them hoary with the use and belief of centuries. One method of treatment is to wash the dog-bite with rice water, then to scarify with a silver prong until all the poisoned blood has escaped, then to apply a wet poultice of chewed almonds, which draws out and neutralizes the poison. Other remedies in good repute are a preparation of ginseng, which is considered an antidote, and a dose made by pulverizing certain small insects, like lice. By some of the native doctors this latter is held to be almost a specific.

One old style Chinese practitioner, after describing the symptoms of rabies in man, stated that not one case in a hundred recovered, even with the ordinary modes of treatment. He then naively remarked, "But if they will take my medicine they will get well immediately." His specific treatment was the following: Immediately after being bitten by a rabid dog the

victim is taken away to a secret room in the interior of a house where wind, noise and bright light are excluded. His entire body is washed with cold tea. The wound is bound up with a chewed almond poultice made with a vegetable juice called 'gin tsai.' This poultice is changed once in seven days. After 49 days a white surface appears on the wound. Then a preparation of wild mint supersedes the almonds. From the first a dose of medicine is given daily for seven days consisting of the following: angelica root, 2 oz.; liquorice, 2 oz.; peppermint, 2 oz.; orange peel, 2 oz.; ginger, 5 oz.; purple bamboo root, 10 oz.; sarsaparilla, 6 oz.; ginseng, 3 oz.; an unidentified plant from Ningpo, related to atractylis ovata, 2 oz.; pinella tuberifera, 2 oz.; a plant from Szechuen, not classified, 2 oz.; ligusticum acutilobum (probably), 1 oz.; root of rehmannia glutinosa, 1 oz. This is boiled together and the liquor drunk at one draught.

After the first seven days the bean chewing test is employed and is repeated at intervals of one week. When the test becomes negative a cure is considered established. The old native doctor reports having seen three men bitten by a mad dog and one of them saved by this treatment. After being cured by this method the patient must refrain from pork, fish and wine for one year, and must eat no dog meat or red beans as long as he lives. Otherwise the disease is sure to recur. During the treatment and up to one hundred days after the dog bite, the patient must eat no salty or sour thing. The principle of this treatment is two-fold. First it is supposed to neutralize the poison and draw it from the wound, and second it is supposed to decrease the internal temperature.

Chinese prescriptions are characterized by great bulk, large variety of drugs and unpleasant taste, and its effectiveness is often measured by these standards. The following is a fair sample in general and it illustrates the formula administered in rabies by a Chinese physician of wide repute in Changsha.

Bamboo root, an indefinite quantity.
Raw hypericum, 1 oz.
Ginger root, 3/10 oz.
Liquorice, 3/10 oz.
Angelica root, 3/10 oz.
Root of platycodon grandiflorum, 2/10 oz. (Used as a common cough remedy).
Red gentian, 3/10 oz. (a general tonic).
Root similar to ginseng, 3/10 oz.
Rind of citrus aurantium, 3/10 oz.
Pachyma cocos, 3/10 oz (a false tuber growing fungus-like on the roots of fir trees. Commonly called "China root").
A red colored root from Szechuen Province, 2/10 oz. (used in liver complaints and as blood purifier).

These are boiled together in a large vessel of water to a thick fluid, and the decoction is to be taken at one dose before it cools.

It is interesting to compare these ideas which have been held for centuries by the Chinese with certain conceptions current until quite recent times in Europe and America. According to Stimson[1] (*Hyg. Lab. Bull.* 65, 1910), the western history of rabies dates back to the time of Aristotle and Democritus in the fourth and fifth centuries B.C. respectively. Celsus in the first century A.D. gave the first detailed description of the disease, which was amplified by Caelius Aurelius and Celsus in the second century. Without much change these early conceptions came down through the middle ages, until the nineteenth century, when inoculation experiments and scientific investigation of rabies culminated in the epochal researches and productions of Pasteur.

A few facts not ordinarily known are yet matters of old observation and record and justify repetition. Short-haired dogs more frequently become rabid than do long-haired dogs, because the saliva is rubbed off on the long hair. Young dogs are susceptible as well as old ones. The saliva of a rabid dog may be virulent before the appearance of symptoms. Fear of water is infrequent in rabid animals. It is not mentioned in Chinese annals. Mad dogs may be playful at first and do not always froth at the mouth or carry the tail between the legs.

Avicenna taught that the cause of rabies consisted of small likenesses of dogs which were passed in the urine of the victim of rabies after having taken cantharides. These were really blood clots. Their passage was supposed to result in cure. Frederick the Great promulgated a decree providing for the removal from dogs' tongues of the so-called "mad worm," later found to be a normal cartilage of the tongue. This was done to prevent the animals from contracting rabies. To diagnose rabies at one time it was the custom to apply the bared breast of a living fowl to the dog-bite. The death of the fowl proved the poison of rabies present. The mad stones, which are said by Stimson to be still used in certain parts of the United States, are quoted by him to consist of tri-calcium phosphate, obtained as calculi from the gastro-intestinal tract of various animals. They are said to adhere to such poisoned wounds as dog or snake bites and to draw out the poison. Evidence of this is to be found in their discoloration when later boiled in milk. Not even yet has the belief in the spontaneous origin of rabies been entirely abandoned, although modern investigation proves conclusively that the disease is essentially an infective process and that each case depends on inoculation with the specific virus.

There is a parallelism between the observations and deductions of the Chinese and of occidental peoples. While the scientific descriptions and conclusions in the west have been far more accurate and detailed than any in China, never-

[1] The facts noted in regard to the history of rabies in western countries are taken from Stimson's excellent monograph.

whether the subject be scientific, political theless the popular beliefs of the Chinese compare very favorably with those of western races. The Chinese does not use our system of logic and sequence in his reasoning. But the essential point is that he has a system, even though it be radically different from anything known in the west, and to the best of his ability he consistently follows this system in his reasoning, or philosophical. His standard of judgment does not lie in efficiency or results, but in the test of antiquity. To be old is to be good. Whether measured by his own or by the western standard, the native Chinese ideas of rabies suffer little in comparison with the ideas current in the west until a generation ago or less.

TUBERCULOUS INFECTION AS A DISEASE ENTITY.*

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WITH the development of a relatively new art,—the early diagnosis of tuberculosis,—we find ourselves in a place where we must readjust our attitude toward the general tuberculosis problem. While we have quite readily accepted the belief that the majority of persons have a tuberculous infection at one time of life or another, and while we have recognized that a large number of individuals carry a dormant infection from childhood, we have been very slow to appreciate what these facts must mean in our general attitude toward the disease.

The more recent trend of opinion develops several other facts radically altering the tuberculosis problem. With the acceptance of the doctrine that tuberculosis is largely a childhood infection, we have come to believe that the disease is not as infectious to healthy adults as we had once believed. Further, those who have engaged extensively in the clinical study of the disease have come to feel that tuberculous infection manifests itself very frequently in other forms than those formerly recognized as tuberculosis.

It is untenable that an infection as common as this should give but one of two results; on the one hand, a serious and often deadly disease; on the other, no recognizable disease at all. It is more reasonable to assume that there is a broad borderland between health and active tuberculosis,—that tuberculous infection may cause numerous forms of illness, varying all the way from simple "poor health" to actual physical ailment.

That such is the case is borne out by our newer conception of tuberculous infection as the causal factor in many cases of so-called neurasthenia and in those diagnosed as typhoid fever (especially of the ambulatory type and without rose spots), exophthalmic goitre (with elevated temperature), "nervous dyspepsia," and various digestive disturbances, malaria (without demonstration of the plasmodium), and so on.

Our present ability to diagnose tuberculous infection in the absence of clinical evidence of disease, or with signs and symptoms previously ignored or regarded as insignificant, renders it necessary for us to alter our methods in advising and treating our patients, and compels us to adopt measures more suitable to the "new disease," which this earlier diagnosis has developed.

Formerly, a clinical diagnosis of tuberculosis suggested one of three courses: (*a*) sanatorium treatment, (*b*) out-of-door treatment at home, or (*c*) ambulatory treatment with tuberculin or other medicinal agents. This program, with no alternative, implies that in all cases of demonstrable tuberculous infection we are justified in disrupting the individual's business and social life and in making him an invalid. This is one of the beliefs which, in the light of our present knowledge, is open to serious question.

Some one has suggested that tuberculosis is a disease of nutrition in which the tubercle bacillus is an incidental factor. While we are not quite ready to accept this very sweeping assertion, we must recognize that thousands of persons are carrying inactive tubercle bacilli constantly with them and that their safety depends upon their maintenance of good bodily health. The development of active tuberculosis among previously healthy persons, after debilitating disease or physical or mental strain, and without known exposure to tuberculous infection, is too commonly noted by physicians to require comment.

Hence it is reasonable to assume that the course to be pursued in those cases in which tuberculous infection is demonstrated without diagnosis of tuberculous disease, is that of building up the general health and thereby increasing the bodily resistance.

Such, in fact, is the basis of our present hygienic treatment of tuberculous disease and such is the plan of sanatorium treatment. Out-of-door sleeping, plenty of nourishing food, rest and carefully supervised life, are merely our means of aiding the individual to fight his own battle against the bacilli. Where this method of treatment has gone beyond the limits of rational living,—as in undue hardships or exposure and in forced feeding,—it has failed.

For the patient with any degree of disease activity—which means the patient with clinical tuberculosis,—sanatorium treatment, with its prolonged rest and rigid supervision, must be insisted upon. For the individual whose infection is demonstrated, but found to be wholly

* Presented before the Chicago Medical Society on April 28, 1915.

inactive, I am impressed that regulation of life need not be pushed to a point incompatible with ordinarily useful existence.

For example, we find many patients without evidence of disease who give decided reaction to tuberculin administered intracutaneously or subcutaneously.* This patient may complain of weariness. He may have had slight loss of weight or finicky appetite. He has no elevation of temperature and no digestive disturbance. Physical examination may be entirely negative. To the more careful observer it may reveal a retracted apex or some old lesion apparently quite inactive.

This individual doubtless has tuberculous infection. To conclude that he is a consumptive and likely to prompt breakdown is the height of folly. To entirely disrupt his life and relegate him to a sanatorium is unjustifiable. He does require the readjustment of his methods of life, however, and in this his physician should be his constant guide and advisor. He must not be branded as "tuberculous," with all of the present blighting significance of that term.

The French have classified tuberculosis in four groups: (1) That which is never recognized or suspected,—in which the patient never knows that he is in any sense unwell. (2) That which is cured by a vacation without recognition of its true nature. (3) The tuberculosis which we now recognize clinically and which may be cured by our present means. (4) The massive, acute tuberculosis in which all treatment is futile. And it must be recognized that most of our cases come in the first two groups: that they are not recognized during life as tuberculosis.

There are scores of persons who come to the physician who are found to have tuberculous infection and who, on careful examination, are found to have slight evidence of physical disturbance or ill health, who should be regarded as tuberculous in a modified sense,—"pretuberculous," perhaps,—who should begin their treatment with a sane vacation and who should complete it by intelligent supervision while they pursue their normal lives.

As to whether or not tuberculin is indicated in these cases is a matter for the decision of physicians who are experienced in its use. Certainly tuberculin should be given rarely if at all by the man whose many and varied duties in general practice prevent his becoming thoroughly conversant with this valuable but dangerous agent.

Whatever the method of treatment, the recognition of "tuberculous infection" as a disease condition meriting curative effort on the part of the physician, will not only do more than any other factor in checking the shocking morbidity and mortality of this disease; but it will restore to health thousands of those now suffering from vague and indefinite disease and will serve to decrease the countless legions of those who now constitute the army of "poor health."

It is hardly necessary to add that the success of this line of action will depend, to a large extent, upon the skill of the physician as a general diagnostician. Even though the patient may have an unquestioned tuberculous infection, it is not rational to attribute his vague ill health to this cause alone unless we have eliminated or carefully weighed all other conditions to which the ill health may be wholly or partly attributable. But, in my opinion, after all of the other causes have been disposed of, there will be found scores of persons in whom a partly latent tuberculosis is the only demonstrable cause of physical deficiency.

It is not necessary to enumerate the groups of persons in which these cases will be found. Neurologists already recognize the importance of closed tuberculous lesions as causal factors in nervous disorders. Thousands of persons, after prolonged stomach and intestinal disorders, arrive at the final conclusion of their tuberculous condition; other thousands doubtless never reach this definite conclusion. The waiting rooms of laryngologists and rhinologists will offer a fertile field in our search for subjects. And yet the greater number will probably come from the ranks of those in "poor health,"—the never-sick-never-wells,—those who are forever physically inefficient and below par,—those who are "naturally thin" with poor digestions, poor appetites, unstrung nerves and feeble endurance. If our applicants for "spring tonics," and consumers of patent medicines were subjected to competent examination, the results would be striking. * * *

Another point which, in my opinion, will be an exceedingly important one during the next few years, is the relationship of tuberculous infection to life insurance risk. In the past, insurance companies have rejected those who have family history showing tuberculosis and, even to-day, they are viewing the disease with the utmost suspicion. There are few companies, if any, which would accept an applicant who stated frankly that he had a tuberculous infection, and yet these same companies are annually accepting not only those who have infection, but those who have demonstrable tuberculous disease.

This is due to the fact, of course, that tuberculosis, tardily diagnosed, is and always has been and always will be an extremely deadly disease and, further, that no company is requiring as careful scrutiny on the part of its examiners as would be required to detect this very common disease in its incipiency.

The interesting question arises, however, as to what attitude insurance companies can take when their examiners perfect themselves in diagnosis and begin to report scores of otherwise healthy applicants who have unquestioned, but presumably inactive, tuberculous infections. If

* It seems hardly necessary to state that the von Pirquet test is absolutely useless in the diagnosis of tuberculous infection in adults.

they assume their present attitude toward the disease, the companies having the most thorough and competent examiners will have rejections which will hopelessly discourage their agents and insurance selling forces.

I do not mean to say that those applicants now diagnosed as tuberculous should be accepted as risks. On the contrary, the number of deaths from tuberculosis among recently insured persons is inexcusably large. It unquestionably indicates that active tuberculosis is frequently overlooked by examiners.

At the present time, however, early diagnosis of tuberculosis is developing rapidly. Not only are certain individuals who devote themselves to the subject, acquiring a high degree of proficiency; but the better class of physicians are appreciating the former neglect of this important branch of their work and are schooling themselves accordingly. Hence, it will not be long before insurance companies will have to radically change their attitude toward the disease or they will be compelled to reject hundreds of persons with tuberculous infection who are in every sense quite as good risks as the average of those now accepted.

The recognition of tuberculous infection as distinct from tuberculous disease will do much toward ridding this common disease of its present terrors and will go far toward solving the entire tuberculosis problem. The failure of medical men to see the various stages of tuberculosis in their proper proportions and their reluctance to present inevitable and indisputable fact to the patient, is largely responsible for the blind and unreasoning dread of the word "tuberculosis" among the people.

Not until the medical profession sees the disease in a different light will the patient receive his diagnosis sanely nor will he receive it early enough to save him from prolonged illness or unnecessary death.

Pottenger is responsible for the assertion that there is a time in which every case of tuberculosis is curable. This is not, however, after it can be demonstrated by ordinary means of physical examination even at the hands of the most talented of diagnosticians. And even in the massive, acute form of the disease, there is doubtless a period in which cure could be brought about. That time, however, may have been twenty years ago, when it could not have been recognized as a disease at all; but merely as an infection.

PROGRAM AND DIRECTIONS FOR THE MENTAL EXAMINATION OF ASOCIAL, PSYCHOPATHIC AND DOUBTFUL SUBJECTS.

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(*Continued from page 865.*)

ROUTINE PROGRAMS.

The following are minimum programs. One of them should seldom occupy less than an hour or more than an hour and a half. The data so obtained may be supplemented by means of additional tests selected from Table 2 on page 60, in accordance with the nature of the individual problem.

The Yerkes-Bridges Point Scale is made the basis of the examination, except for illiterates and non-English speaking subjects, when it is replaced by the Knox Scale. It is true that all save one (No. 18) of the Point Scale tests can be given to illiterates, but such subjects are at a disadvantage with many of the other tests, partly through inferior training, and partly through their diffidence in the presence of anything that is to them suggestive of the schoolroom.

For the present it is desirable to secure the Binet rating whenever possible for the purpose of comparison, especially as this can be done at the cost of so little additional time.

Most cases can be classified, conveniently for examination purposes, as precautionary, mental cases, social cases, suspected psychoses, illiterates and non-English speaking* subjects. The routine programs subjoined are arranged under these heads. The sense in which each of these phrases is used will be discussed in the following section. This classification is open to criticism on logical grounds but it is believed that it will be found convenient in practice.

I. PRECAUTIONARY CASES.

1. Y, in full.
2. B, to obtain rating.
3. One of the following tests:
   (3-9 years) H I,
   (From 9 years) H XXIII.

II. MENTAL CASES.

1. Y, in full.
2. B, to obtain rating.
3. Two of the following tests, including, if possible, H XXIII:

* In this discussion, "non-English speaking" is used of the individual subject. This differs from the usage in the publications under No. 11 of the references on page 63 (given also under "Working References," page 6), where "non-English" and "non-English speaking" apnear as abbreviated forms of the expression, "children of non-English speaking parents."

(4-5 years) Seguin's form-board,
(4-9 years) H I,
(5-8 years) H II,
(From 8 years) H III,
(From 9 years) H XXIII,
(From 10 years) H IV,
(From 12 years) H V.

4. As many of the following tests as are applicable:
(From 7 years) H VIII,
(From 7 years) H XIII,
(From 9 years) H XII.

5. (Adults) prose completion, and labyrinths.

III. SOCIAL CASES.

1. Y, in full.
2. B, to obtain rating.
3. One of the following tests:
(3-4 years) Seguin's form-board,
(4-9 years) H I,
(From 9 years) H XXIII.
4. (*a*) Unstable individuals:
(From 6 years) H VI,
(From 7 years) H XIII,
(From 12 years) H XVI,
(From 14 years) labyrinths.
(b) Court cases and delinquents:
(From 6 years) H VI,
(From 9 years) H XXI and XXII.
(From 13 years) ethical discrimination,
(From 14 years) labyrinths, and K adult 7.
(*c*) Economic cases:
(From 7 years) HVIII and XIII,
(From 12 years) H XVI.
Also, two of the following tests:
(From 8 years) H III,
(From 10 years) H IV,
(From 12 years) H V.

IV. SUSPECTED PSYCHOSES.

A. English speaking subjects:—

1. Y, in full.
2. B, to obtain rating.
3. One of the following tests:
(4-9 years) H I,
(From 9 years) H XXIII.
4. One of the following tests:
(From 8 years) H III,
(From 10 years) H IV,
(From 12 years) HV.
5. Such of the following as are applicable:
(From 6 years) H VI,
(From 7 years) H XIII,
(From 9 years) H XII.
6. (From 14 years) prose completion, labyrinths, and K adult 7.

B. Non-English speaking subjects:—

1. K, to obtain rating, if possible.

Note, (1) that the repetition of digits is a test of very unequal difficulty in different languages; (2) that the average interpreter, who is not a psychologist, cannot be relied upon to translate problem questions and their answers without modifying their value for examination purposes (questions like K XII 2, 3 and 4 fall under this suspicion); and (3) that memory tests involving narrative, such as K XI 3, are, in like manner, of doubtful value when given through an interpreter.

2. One of the following tests:
(4-9 years) H I,
(From 9 years) H XXIII.
3. One of the following tests:
(From 8 years) H III,
(From 10 years) H IV,
(From 12 years) H V.
4. (From 14 years) labyrinths, and K adult 7.

V. ILLITERATES.

1. K, to obtain rating.
2. Y, omitting No. 18.
3. Such of the following tests as are applicable: B VI 1, VII 1, VIII 4, IX 1, X 1.
4. One of the following tests:
(3-9 years) H I,
(From 9 years) H XXIII.

VI. NON-ENGLISH SPEAKING SUBJECTS.

1. K, to obtain rating, if possible (see above, IV B 1 note).
2. Such of the following tests as are applicable:
Y 1 = B VI 5,
Y 2 = B VII 3,
Y 3 = B IV 4 and V I,
Y 16 = B X 2.
3. (From 9 years) for subjects familiar with our money, B IX 1 and X 1.
4. (From 10 years) B X 4.
5. One of the following tests:
(3-9 years) H I,
(From 9 years) H XXIII.
6. Such of the following tests as are applicable:
(From 7 years) H VIII,
(From 8 years) H III,
(From 10 years) H IV,
(From 12 years) HV and XVI.

REMARKS ON CLASSIFICATION OF CASES.

Most of the cases fall into one of three classes, those that may be described as precautionary, the mental problems, and the social problems.

Under the first head come those subjects who have given no evidence of abnormality. Such individuals are sometimes examined because of abnormality in other members of the family, and sometimes they are referred from some social agency which has recently taken charge of them, the mental examination being utilized as one means to a more certain understanding of their needs and capabilities.

In such cases, a favorable result of the routine examination usually closes the case, at least for the time. That is, it is sufficient if the subject is found to be mentally normal or advanced, or suffering only such slight retardation as may be abundantly accounted for by known conditions.

Sometimes, however, a more searching examination is especially requested, and then the examiner must use his judgment as to the additional tests to be employed. From the "history" of the case, or from conversation with the subject or with the person accompanying him, or from the record made already on the routine examination, it may appear that certain traits deserve special study. In general, it may be said that, with children up to about twelve years of age, learning capacity is of prime importance; while, with older subjects, practical judgment and constructive imagination should be stressed.

Under the second head come those patients who have given definite evidence of mental deficiency, such as children who repeatedly fail of promotion in school. This class, again, may be separated into two groups according as the individuals react normally in some relations or in none.

Occasionally a subject, presented as an all around defective, makes a normal record on the tests, and one is forced to conclude that the defect is in the environment, or possibly in some highly specialized function which the tests fail to reach. In such a case, additional tests may be given in order to strengthen the evidence for a conclusion which will be, at least unexpected, and possibly even unwelcome. Generally, however, such subjects do not react normally to the tests, and the task of the examiner is to determine the amount of deficiency and the sort of care likely to be necessary.

On the other hand, if it is only in certain relations that evidence of defect appears, there is much greater likelihood that the score by the Binet or the Point Scale may be normal. A child, for example, may be quite backward in school, but apparently normal in all other ways, and his backwardness may turn out to be due to general mental defect (an arrest of development which is just beginning to show itself), to a specialized defect, or to unfavorable environment. If the examination indicates normal mentality, that may be sufficient if the environment is known to be doubtful and can be improved. Otherwise, one should look for some specialized defect, such as poor visual memory; and, also, for any specialized ability which might be utilized as compensation for the defect. Thus, if suitable training could be given, good practical judgment might combine with strong kinaesthetic memory to atone for a considerable deficiency in visual verbal memory.

If a subject proves to be seriously defective, the question arises as to the kind and amount of care required. The guardians need data on which to base decisions as to custodial or institutional care, and as to whether the subject can probably earn his own living, and, if so, by what sort of labor and with how much supervision. The decisive factor in the case is often a matter of social reactions, but the mental examination should contribute its share towards the solution. Important points are motor coordination, attention, ability to learn by experience, auditory memory, practical judgment, tock of ordinary information and ability to acquire such, and suggestibility.

The problems classed as social are met at all ages, but more frequently as the age increases, until by sixteen or seventeen nearly all fall into this group. It includes, besides court cases and delinquent girls, many economic cases, individuals from fourteen upwards who either refuse to work or fail to keep any position, and unstable individuals, as, for example, children who are said to be unmanageable, having violent fits of temper and perhaps cruel to younger children.

The origin of the trouble may lie in an unfavorable environment, a general mental defect, some mental peculiarity, or a combination of these.

Here are found a large proportion of subnormal and borderline cases. An individual may develop fairly well up to twelve or thirteen years, and then suffer an arrest of mental development. If he leaves school early to go to work, the school record may give no evidence of excessive retardation. A mental examination at fifteen may fail to give conclusive evidence; but it may show, for example, high suggestibility, and slow, inaccurate or inappropriate reactions. t is well then to request a second examination after six months or a year.

Sometimes the Point Scale examination shows a distinctly good mentality, and then a few supplementary tests may furnish indications of abilities that would repay training. Occasionally the whole trouble arises from the fact that an able individual lacks suitable outlet for his energies.

Roughly speaking the significant functions are likely to include, for court cases and delinquents, practical judgment, constructive imagination, suggestibility, and reaction-time; and, for economic cases, attention, auditory memory, and ability to learn by experience; while, in all social cases, abnormalities of the affective life are likely to be present.

When a psychosis is present or suspected, the examination should stress motor coördination, attention, memory (including "information" ests as well as those ordinarily grouped under memory), suggestibility, and imagination.

For examination purposes, the illiterates and the non-English speaking subjects form groups by themselves, regardless, to a considerable degree, of the problem involved.

The illiterates are generally immigration cases, the practical question being whether they

shall be admitted or deported. Important facts to be determined are the subject's ability to learn by imitation or by experience in concrete situations; to analyze such a situation and to plan on the basis of that analysis; to acquire, retain and use practical information, and, for English speaking subjects especially, to comprehend and to follow verbal instructions.

The non-English speaking subjects include, besides immigrant cases, not a few individuals who have been in this country for a number of years. Typical cases of this sort are the Hebrew women from Russia, who have had no formal education in their old home, and who come to this country after they have been married several years. They usually live in Hebrew communities, and the care of home and children confines them so closely that years may pass without their learning more than an occasional word of English.

Analysis of Two Illustrative Cases.

To illustrate the practical working of these programs, two cases, one mental and one social, will now be analyzed.

A MENTAL PROBLEM.

Let us suppose a boy of 13.4 years is brought for examination because he failed of promotion in school last year and bids fair to fail again this year. He is said to appear bright enough out of school, and to be normal in most ways; but he is a state ward, little is known of his people, and an arrest of mental development is feared.

He is prepossessing and responsive, and makes a favorable impression on the examiner.

The result of the Point Scale examination is a score of 82 points. He belongs to the unfavored, English speaking class, and the graph for that class shows 79 to be the norm for his age. It also shows 82 to be the norm for 15 years. Apparently, then, there is no general retardation. It remains to investigate the possibility of a specialized defect, and, if that is found, of special abilities which may tend to compensate for it.

His Point Scale record shows that, in the repetition of sentences, he gave only the first group correctly; in the repetition of digits he gave five correctly, but failed on six; he gave 70 words in 3 minutes; attempting to use three given words in one sentence, he formed a compound sentence, which counts as two; he failed to define justice, knowing only Justice of the Peace; of the analogies, he was able to complete but three; in drawing from memory, he obtained one point credit on each figure; and he failed entirely on the third of the dissected sentences.

The indications, thus far, are of a memory defect, with a development of the reasoning powers which is somewhat in advance of his age.

We next fill out the Binet record sheet (Goddard's revision) as far as may be from the Point Scale record. The first failure occurs at V 3. As this is a test of memory span, and there is no other failure until X 2 is reached, we compromise and begin at VIII. He succeeds with these, and we pass on to IX 1, 3 and 4. He gives the change in IX 1 accurately and promptly, returning one of the dimes and picking out a nickel and a copper for the six cents. On IX 3, he fails to give the year, and we find that though he has read it and heard it repeatedly he has rarely had occasion to write it. He gives correctly the day of the week, remarking that "yesterday was Sunday," and, after a slight hesitation, the month and the day of the month, adding "tomorrow will be St. Patrick's Day." He fails in IX 4, making two errors, one omission and one inversion. He passes on X 1 and XII 5, but fails on XI 4. Thus he makes a record of 10.6 years (if we ignore the failure on V 3), and we find here still further evidence of good reasoning power with poor memory.

H XXIII is finished in 6 minutes with no errors.

H IV, first trial, OK in 2 minutes, with 3 errors; second trial, OK in 1 minute, with no errors.

H VIII, no errors, neat work, with no hesitation.

H XII and XIII, 12 out of 20, and 7 out of 12 details, respectively; in both cases in logical order, but with no attempt at verbal accuracy.

We, therefore, conclude that the boy is not mentally retarded; that he has a specialized memory defect, namely, very poor verbal memory whether for visual or auditory presentation; that his memory is apparently of the motor type; and that his logical faculty and practical judgment are somewhat in advance of his age.

It is probable that the methods of the ordinary school are ill adapted to him, inasmuch as they involve a good deal of verbal memory.

There is the possibility that we are dealing here with a peculiarity of development and not with a permanent condition. It would be well, for the present, to give him the help of a special teacher or a special class. If he continues, even then, to lose ground he should be given a chance in a technical or a trade school.

We should like to examine him again in about a year.

A SOCIAL PROBLEM.

A common type of social problem is the adult who fails to earn a living. A woman of twenty-five, for example, is sent in by the Associated Charities, who report that she comes of sturdy, hard-working people, and that her brothers and sisters have done well in their various ways and in proportion to their opportunities; but that he has drifted from one position to another ever

since she left school at fourteen. Her employers say that she is strong and willing, and pleasant to deal with, but that she does not learn to do even the simplest work properly, that she cannot be trusted to do an errand correctly, and that she sometimes leaves a place without notice and without apparent reason.

On the Point Scale she scores 50, the norm for 8.7 years, whereas an adult should make 90 points. She can repeat only three digits, and only the shortest group of sentences. So far her record resembles the preceding, but in her case it is no specialized defect. She scores only two points on the backward counting. She fails to interpret any of the Binet pictures, but gives very passable descriptions. In comparing remembered objects, she succeeds in giving only one point of difference for each pair, and her definitions of concrete terms are all in terms of use. She gives only 50 words in 3 minutes; fails entirely to compose a sentence with the three given words (she makes a separate sentence for each word); and comprehends only the first two of the four questions in No. 15. She fails on both drawings in No. 16, detects only the first two of the absurdities, and fails on all three of the dissected sentences. She is able to define charity, but not obedience or justice, and she solves only the first of the six analogies.

It is a clear case of feeble-mindeness, and the problem now takes the form of a question as to whether she can probably earn her own living under any conditions, and whether she requires custodial or institutional care.

To obtain the Binet rating, we transfer the record as before to the Binet sheet. We then see that, thus far, she has scored no success above nine years, except XII 4, which is not always significant, and that her failures begin with V 3. As this is not a case of specialized defect, we give IV 1 and 2, both of which she passes, thus making a clear score at the four-year level. Working upward, we find that she succeeds with V 4, but fails on V 5 ("patience"). She passes all again at VI and VII. At VIII, she gives the days of the week correctly, but fails on counting the stamps. At IX, she fails on 1, 3 and 4, giving rather complacently thirteen coppers in change, failing to give anything beyond the day of the week in 3, and naming only seven of the twelve months, and those in irregular order. At X, she recognizes the money correctly. At XI, she fails entirely on the rhymes. Her Binet record, therefore, stands as follows: all right at IV, 3 right at V, all right at VI and VII, 2 at VIII, 1 at IX, 1 at X, none at XI, and 1 at XII. Her Binet age will be 7.6 years if we reckon from the four-year level, or 8 years if we take seven years as the starting point. In the latter case, it should be noted that failures occurred at the five-year level.

Even if the Binet rating were not desired, we should probably give the coin and calendar tests to a subject of this type. Her failures in them show her incapacity for holding her own in business relations. A woman over twenty years old, who has always belonged to the class of unskilled laborers, and who has not acquired this much practical information is clearly incompetent to manage her own affairs.

The next question is whether her failure to master simple tasks is due to herself or to her environment.

H XXIII is incomplete after 10 minutes. She has placed 5 pieces correctly, made 2 logical and 2 illogical errors, and is still experimenting with the tenth square.

At H VIII she works willingly, but with three rrors and one omission in the graphic learning, and four errors and an omission in the reproduction.

In H XIII, she is able to reproduce only two of the twelve details.

In H III, she uses the method of trial and error, and succeeds after three minutes with ten extra moves, the same error being repeated in several instances. She is pleased with her success, and we decide to repeat this as a supplementary test in order to observe the effect of practice. The result is a failure after three minutes.

In H IV, she fails after 8 minutes, making 24 moves and placing correctly only 4 pieces.

In H XVI, she makes a good record as regards both speed and accuracy.

As a second supplementary test, H VI is given. She gives a fair description, but no interpretation, and several details of her free recital are imaginary. Under questioning she is very inaccurate, and she accepts nearly every suggestion offered.

Apparently her learning capacity and ability to profit by experience are very slight; she has little or no ability to plan; her auditory memory is very poor and her suggestibility high.

On the other hand, we notice that with all her blunders on the puzzles she handled the pieces with considerable deftness, her square and diamond were well and firmly drawn, she was successful in the discrimination of weights, and did well in the tapping test. Moreover, she is doing rather better towards the close of the examination than in the beginning.

We, therefore, conclude that she is feeble-minded; that she will require custodial, if not institutional, care; but that, with supervision, she should prove a good worker at simple tasks.

As a matter of fact, such an individual must generally be placed in an institution sooner or later on account of the difficulty of providing adequate supervision elsewhere. Her high suggestibility in combination with the lack of reasoning power and of ability to learn by experience would make her a ready tool or victim, as the case might be, of the unscrupulous.

(To be continued.)

Reports of Societies

CARNEY HOSPITAL CLINICAL MEETING.

CLINICAL MEETING OF THE STAFF OF THE CARNEY HOSPITAL IN THE HOSPITAL BUILDING, THURSDAY, APRIL 22, 1915, AT 8.15 P.M.

DR. LEEN, *Chairman.*

(1) DR. JOHNSON reported two cases:

a. A case of carcinoma of the vaginal vault. Twenty-one years ago the patient had both tubes and ovaries removed for inflammatory disease, by abdominal operation. Two years later the uterus was removed per vaginam, for pelvic pain and discomfort. Neither on curetting nor on hysterectomy was there any trace of cancer. The patient was perfectly well following the second operation, until recently, when a slight bleeding from the vagina was noticed. There was found on examination a small mass in the vaginal vault, which proved, under the microscope, to be carcinoma. Radical operation was out of the question. This seems to be a case of primary carcinoma of the vagina, a comparatively rare condition.

b. A case of normal pregnancy in the third month. One year ago the patient complained of abdominal pain and was operated on; the right ovary, a dermoid, was removed and about four-fifths of the left ovary was resected for cystic disease. A feature of the case was the presence of every presumptive sign of pregnancy.

(2) DR. HEPBURN showed two cases of bone syphilis from the surgical out-patient.

a. A girl of nine fell while roller-skating, injuring her right arm which quickly showed a swelling. After trying home remedies for two or three days, she was brought to the out-patient department. There was found a nodular swelling of the upper half of the ulna, and it seemed probable that a subperiosteal fracture had taken place. The x-ray showed no fracture but the Wassermann was four plus.

b. A man of thirty-eight showed a macular eruption of the left leg with some superficial ulcerations and thickening of the tibia. Treatment for rheumatism had been given at some other hospital, the patient said, but the x-ray showed destruction of bone in addition to the thickening and the Wassermann was four plus.

(3) DR. RUSHMORE showed two cases that had been operated on for prolapse of the uterus.

a. A woman of fifty-four, whose prolapse began over six years ago. Six years ago she had undergone plastic operations, but the prolapse recurred in a few months. Later an abdominal supravaginal hysterectomy was performed, with recurrence of the prolapse in a few weeks. The operation which was performed two weeks ago was to suture the cervical stump into the abdominal wall by non-absorbable sutures, without tension. Hysterectomy makes these cases more difficult to cure as it gives a smaller mass of tissue to incorporate in the abdominal wall. An extensive plastic below also was done. The immediate result is perfectly satisfactory.

b. The second case was one of incomplete prolapse; though the protruding mass was three inches in diameter, the fundus was still in the pelvis. The patient was seventy-four years of age, with chronic bronchitis, blood pressure of 170 mm., slight swelling of the feet and occasional irregular heart action, with no sign of valvular disease or disturbed renal function on two examinations of the urine. The need of relief was urgent as the patient was helpless with the protruding mass, but an extensive operation under ether seemed ill-advised. It was thought best to fix the uterus to the anterior abdominal wall, and thus give at least some relief for the few remaining years of life. Under local anesthesia the abdomen was opened, but the uterus could not be lifted from its position low in the pelvis without causing undue pain. A little ether was given to complete the operation, which consisted in incorporating the uterus with the abdominal wall. Four non-absorbable sutures were used, passing through fascia of recti and deeply into the muscle of the uterus. This gave also a large area in which adhesions may form to assist the sutures. The immediate result is perfectly satisfactory.

(4) DR. LEEN showed three cases.

a. Recurrent gallstones. A man of forty-seven, who had been operated on at the Massachusetts General Hospital seven years ago for gallstones. Stones were found in the gall-bladder and in the hepatic duct. There was also a stone in the common duct, which disappeared after manipulation, but fragments of stone were recovered from the common duct. The convalescence was perfectly satisfactory and the patient was well up to one year ago. Then occurred an attack of abdominal pain with slightly blood-stained vomitus. Five weeks ago a similiar attack, followed by loss of seventeen pounds of weight. Four days before admission, another attack, with severe lancinating pain, originating apparently in the right upper quadrant but marked also on the left, and lower down. Greenish vomitus but no blood. On admission there was a suggestion of icterus, temperature 102.5, tenderness over the region of the gall-bladder, leukocytes 20,000. He was seen in consultation with Dr. Bottomley who advised operation which the patient refused. He is improving daily. In the absence of operation the diagnosis must remain in some doubt but recurrent gallstones seems most likely.

b. Hydropneumothorax. A man of twenty-eight years whose family and past history were negative except that he had pneumonia twice in childhood. Two weeks ago, frontal headache and pain in the right side of the chest which gradually became worse, but did not interfere with work until four days before admission. No history of exposure to undue heat or cold. No tonsillitis. There had been a dry cough since the beginning of the present illness, but no shortness of breath and no palpitation of the heart. On the day of admission before he came to the hospital his chest was tapped by his physician. On admission he looked rather sick and was found to have a clearly marked hydro-pneumothorax of the right side, the heart markedly displaced to the left of the median line. Succussion was easily made out. The examination of the sputum so far has shown no sign of tuberculosis.

c. Tetanus. A boy who four weeks ago and two weeks before admission injured his foot on a nail. On admission, temperature 103; typical facies of tetanus with risus sardonicus, opisthotonos and general contraction of muscles. He has received in all twenty-one thousand units of antitoxin, intraven-

ously and intraspinously and is now well on the way to recovery.

(5) DR. O'HARE spoke on experimental study of renal function. The object of the study in which he had been particularly interested is to obtain a simple short and efficacious test of renal function. These criteria no test as yet satisfies. The objections to the present methods were discussed. The comparison of the nitrogen and the salt in the blood and in the urine at the same time, offers the most hopeful outlook for a satisfactory method at the present time.

(6) DR. A. R. MACAUSLAND showed two shoulder cases for Dr. W. R. MACAUSLAND.

a. Subglenoid dislocation in a boy of long standing, apparently since infancy, and

b. Ankylosis in a girl. Both cases were under treatment and showed improvement.

He then spoke at some length on separation of the epiphysis of the head of the femur, reporting five cases with x-rays, and showing two cases now under treatment in the hospital. These two cases represented two types, the "fat boy" and the anemic individual; both had been treated for some other condition of the hip which was not present. The history is typical in many of the cases, and the x-ray easily confirmatory, yet the cases are often treated for tuberculosis of the hip.

c. Exhibition of two cases, with x-rays, of fracture of the tarsal scaphoid.

(7) DR. MAHONEY showed a patient who had been operated for a breast tumor which weighed fifteen pounds on removal. Photographs gave an excellent idea of the gross relations. The patient was single, thirty years of age. Five years ago noticed a lump in the right breast which appeared following a trauma, with slight discoloration of the skin. Never sore or painful until of late. Gradual increase in size, giving a dragging pain. In the past year menstruation has been very slight, the tumor has increased more rapidly and the swelling has not decreased following menstruation as the patient says was formerly the case. At operation numerous large glands were removed from the axilla. The microscopical diagnosis was adenofibrosarcoma.

(8) DR. BUTLER showed lantern slides of x-rays of a number of intra-abdominal conditions, as ulcer of the duodenum, cancer of the stomach, gall-stone disease, cancer of the large intestine, hour-glass stomach and adhesions due to tuberculosis of the bowel and peritoneum.

(9) DR. LEEN showed a case of relapsing fever. The patient, an Armenian, showed on admission nothing but a slight cold. He was kept under observation for several days and about to be discharged when he had a sudden elevation of temperature to 103, and the spirochete of relapsing fever was found in his blood that night. Slides were shown with the spirochete easily visible. Dr. Leen then gave a lantern slide demonstration of the spirochete of relapsing fever and of syphilis, the trichina and filaria, and an extended series showing the evolution of the parasite in uncinariasis.

STEPHEN RUSHMORE, *Secretary.*

Book Reviews.

Urinary Analysis and Diagnosis by Microscopic and Chemical Examination. By LEWIS HEITZMANN, M.D., New York. Third revised and enlarged edition. New York: William Wood and Company. 1915.

In this third edition of a well-known text-book on urinalysis, the author has attempted to incorporate the many advances made since the appearance of its immediate predecessor. The work is divided into three parts. In the first, on chemical examination, the aim has been to include all the simpler methods and tests. Many new tests have been added but the more complicated tests are omitted. The second part, on microscopic examination, bears the chief stress of the work, and in it the author emphasizes his belief that correct diagnosis can generally be made by careful high power study of urinary sediment. In the third part, on microscopic diagnosis, a number of full page illustrations have been added and the entire work is now illustrated with 131 figures, mostly original. An appendix contains a standard form for report of urinalysis and a list of apparatus and re-agents required. The illustrations are useful and accurate, though often not artistic, and the book should prove of definite value to students and practitioners, especially in the field of clinical microscopy.

Clinical Diagnosis. A Manual of Laboratory Methods. By JAMES CAMPBELL TODD, Ph.B., M.D. Illustrated. Third edition, revised and enlarged. Philadelphia and London: W. B. Saunders Company.

The first edition of this work, published under the title of "A Manual of Clinical Diagnosis," was reviewed in the issue of the JOURNAL for January 21, 1909 (Vol. clx, p. 81); and the second edition under the present title, in the issue of the JOURNAL for June 20, 1912 (Vol. clxvi, p. 935). In this third edition the general scope of the work is again somewhat enlarged, chiefly by the addition of new material as the outgrowth of questions arising in the class and laboratory. Considerable additions have been made, especially to the chapters on sputum, urine and animal parasites. The chapter on the use of the microscope has been enlarged and the section on cerebro-spinal fluid rewritten in the light of recent advances in knowledge. Numerous new methods of laboratory diagnosis are included and a new chapter has been added on serodiagnostic methods by Dr. Ross C. Whitman, professor of surgical pathology and serology in the University of Colorado. The number of illustrations has been increased by thirty-five, the new figures being chiefly photomicrographs. The work should continue to be of practical usefulness to students and practitioners.

Practical Tropical Sanitation. By W. ALEX MEYRHEAD. New York: E. P. Dutton and Company. 1915.

This British treatise on tropical sanitation, dedicated to Sir Ronald Ross, represents the experience of a royal army medical officer in West Africa. It is intended as a manual for sanitary inspectors and others interested in the prevention of disease in tropical and subtropical countries. The text is based on the author's lecture notes used at the School of Army Sanitation at Aldershot. The treatment of the subject is wholly practical, theory and experimental research being almost wholly eliminated. The appendix contains a large amount of valuable material chiefly of a technical nature. The work is well illustrated with 114 figures. It should prove of definite practical value for army officers and others engaged in field work in the prevention and control of tropical diseases.

The Origin and Nature of the Emotions. By GEORGE W. CRILE, M.D. Edited by AMY F. ROWLAND, B.S. Philadelphia and London: W. B. Saunders and Company. 1915.

This volume of miscellaneous papers, consisting of a series of eight essays and addresses delivered on various occasions, may be regarded as a supplement to the author's works already published on the subject of surgical shock and the nature of anoci-association. The first of these addresses was the ether day oration at the Massachusetts General Hospital in 1910, published in the issue of the JOURNAL for Dec. 8, 1910 (Vol. clxiii, p. 893). Other addresses present his theory of the relation of phylogenetic association to the emotions, and the relation between brain functions and the physical state of brain cells. Dr. Crile takes a mechanistic view of psychology and undertakes to establish a mechanistic theory of disease. The tendency of both these concepts bears a striking parallelism to Loeb's mechanistic conception of life. However one may agree or disagree with Dr. Crile's deductions, which, like most conclusions from postulated theory are, perhaps, carried unwarrantably far, his work remains a valuable and suggestive contribution, both to surgical research and to biologic philosophy.

The Sun Cure. By DR. A. ROLLIER. Paris: Baillière and Son. 1914.

This French monograph presents the results of ten years' work by the author in the development of the method of sunlight cure in the treatment of surgical tuberculosis. However radical his methods may appear, his results have, within recent years, become known and seem, in considerable measure, to justify the procedures. The book is abundantly illustrated with many colored plates, radiographs and figures in the text.

Legal Principles of Public Health Administration. By HENRY BIXBY HEMENWAY, A.M., M.D. Chicago: T. H. Flood and Company. 1914.

This text-book of legal appearance aims to present for the benefit both of lawyers and of physicians the legislative and judicial principles upon which public health administration is based. Compilations and analyses of public health laws have previously been published, but this is the first modern treatise to attempt the scientific legal exposition of the principles of public health and preventive medicine. The introduction by Professor John Henry Wigmore of Northwestern University emphasizes the importance of such a work as a basis of precedent and authority in legal decisions. The author's foreword calls attention also to the necessity of a recognized legal code underlying all attempts at public health improvement and regulation. The text is divided into two parts, the first dealing with general principles, the second with special topics such as quarantine, licenses, water supplies, drainage, garbage disposal, pure food, drug and industrial regulation, school inspection and eugenics. This last chapter is one of especial interest. On account of the still rudimentary character of this science, so far as it is positively developed, the chapter is necessarily brief, but so far as it goes, may be regarded as sound and conservative. The volume closes with an extensive index of cases cited and a general index to the text. It should be a work of value to physicians purposing to engage in public health studies or work, as well as to lawyers and legislators who may be concerned in similar matters.

State Registration for Nurses. By LOUIE CROFT BOYD, R.N. Second edition. Philadelphia and London: W. B. Saunders Company. 1915.

The first edition of this monograph was reviewed in the issue of the JOURNAL for June 22, 1911 (Vol. clxiv, p. 896). This second enlarged edition represents the growth of the corresponding material during the past four years. It contains the same headings as the previous edition with the exception that the excellent bibliography of the first edition has been replaced by the full text of the laws prevailing in the various states of the union, relative to the registration of nurses. This text constitutes the bulk of the increase in the size of the book, but it seems a pity that its inclusion should have been felt to necessitate the elimination of the bibliography. Like its predecessor, this publication should be of value to all interested in the profession of nursing and its legal status.

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PHYSICAL TYPES IN THE HUMAN BEING.

There is abundant evidence that the past ages produced their observers no less keen than we can boast: it is even to be questioned if the increasing cloud of specialties has not tended to make for short-range vision. Certain it is that no modern has improved much upon the description given some 2400 years ago by Hippocrates or 2000 years ago by Lucretius of a disease so characteristic and unchanging in its manifestations as epilepsy.[1]

It is equally certain that for at least 2000 years there has been a consciousness of the division of the human race into opposing types. Thus Plutarch[2] makes Caesar say in substance, "As for those fat men and smooth combed heads, I never reckon of them; but these pale-visaged and carrion lean people, I fear them most." These words as later paraphrased by Shakespeare[3] are worth reading as a graphic description of the mentality of the carnivore. Nursery rhymes such as "Jack Spratt," attest the same appreciation of type by the so-called common people. More recently, in the scientific world, Hall[4] has stated that infant nature divides sharply into two types, the passive and the active—precursors of those recognized in the adult by Caesar.

Since 1890 or so, interest in general fundamentals seemed to have yielded to detail work; but lately a healthy interest in these broader aspects of medicine is again apparent. Thus the question of type and development has been approached on biologic grounds as evidenced by the papers of Bean[5] and others. Recently we had occasion to refer to the first of a series of papers by Bryant[6] on this subject of type, the second of which is about to appear. In this issue we present as the current Shattuck lecture, a review of our existing knowledge of type and its potential usefulness to medicine of the future. Dr. Goldthwait under the title of "An Anatomic and Mechanistic Conception of Disease," has based his argument upon his own observations and those of others, and has thrown the burden of proof that type does not exist, or existing is unimportant, upon those who, like the anti-vaccinationists, refuse to be convinced by well supported facts. The case for the existence of type may be considered closed and proved.

The study of type has come to stay, to be a powerful factor in constructive work of the future. Many basic problems present themselves, as the effect of diet and climate upon type, and the relation of both these factors to the evolution of type in a given locality. Thus Cattell[7] has recently argued that climate has a striking influence upon mentality, and Ellsworth Huntington[8] believes that climate may be a determinator of civilization.

Education is, however, the real question at issue. All the facts may be correct, but if they remain unknown for years they must needs be discovered anew as were Mendel's laws, before they become useful. Dr. Goldthwait in his deductions has covered the field of possibilities, indications and necessities so thoroughly that little can be said except in reinforcement of his remarks. He has shown at least some of the definite meanings of type for the physician alert to new paths to efficiency. He has considered the present tendency, due in part to the increasing prevention of natural elimination of the unfit, toward the carnivorous type with both its

good and bad qualities, and suggested methods by which the tendency of the race in this part of the world may be turned to positive good account for the future. But of greatest moment is his statement that the coming importance of the understanding of type will necessitate a new method of teaching anatomy, physiology and the allied sciences.

The time is in all certainty soon coming when it will no longer be taught as at present in the best schools that, for example, the human intestine is so many feet long, and that measurements obtained above and below this figure are variations from the normal. It will, on the contrary, be recognized that there are two structurally, functionally, absolutely different types, both normal of their kind. One type will have perhaps double the length of intestine to be found in the other; the text book's normal of old will lie somewhere between these extremes, and will be of less consequence than either, for the ailing patient will probably fall either one side of the normal or the other, according to his type. But after all, the time will come when the student will acquire this newer knowledge in his routine instruction.

The vital issue is the instructing of present medical graduates upon whom devolve the care of patients now, before the arrival of the next generation of doctors and educators. The opinion is ventured that not one in a hundred of the intelligent medical men now in practise have ever heard of type, or having heard, realize what it may mean to them or to their patients. How many men are there who, looking at a man in the street, can give an approximately correct outline of the anatomy and internal physiology of the stranger? Yet for the medical man this or something like it should be common knowledge.

If repetition, reiteration without irritation, be the key to education in a new subject, then it behooves us to reiterate that the essayist has in his discussion of type projected a ray of light into the medical teaching of the future. Having said it, we repeat it in the faith that truth repeated brings conviction save where densest ignorance prevails. Some medical school will be the first to incorporate lectures on type in its curriculum. The others will follow where they can no longer lead, giving to student and patient alike the benefit of this newer knowledge of type, this newest aid to the science and art of medicine.

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INJECTION OF THE SPHENO-PALATINE GANGLION.

In recent years there is a noticeable tendency to reach parts of the nervous system which are not easy of approach, in our therapeutic endeavors to relieve the pains which could not very well be alleviated satisfactorily in other ways. In this connection we may mention injections into the peripheral nerves, particularly the trifacial, epidural injections and perineural infiltrations for the relief of the pains of subacute and chronic sciatica, injection into the spheno-palatine ganglia, and, very recently, injection into the Gasserian ganglion.

The use of injection into the spheno-palatine ganglion is not as widely known as it should be, and it is for this purpose that the reader's attention is here called to it. In a paper read before the American Academy of Ophthalmology and Oto-laryngology in 1907, Stein, of Chicago, suggested the injection of alcohol into the nasal nerve and into the region of the spheno-palatine foramen. So far as known, however, Greenfield Sluder, of St. Louis, first made mention of alcoholic injection directly into the spheno-palatine ganglion in the *New York Medical Journal*, August, 1909.

This method of treatment may be employed in four general conditions, as follows: hay fever, the syndrome of true spheno-palatine neuralgia, hyperesthetic rhinitis, and post-operative neuralgia. In true spheno-palatine neuralgia there is pain in the region supplied by the branches of the ganglion, the typical location being over the root of the nose, in and about the eye, over the frontal region, and even radiating into the pharynx and tonsil, the ear, the mastoid and occipital region, and not rarely into the neck, shoulder, arm and even fingers. This condition is usually associated with suppuration in the sphenoid sinus and ethmoid cells, the pain persisting after proper surgical treatment of the sinuses and cells has been instituted. In a small number of these cases it is found that the pain

first makes its appearance after thorough opening and draining of the accessory sinuses has been carried out for the relief of the chronic suppurative sphenoiditis and ethmoiditis. It is these cases which are properly referred to as post-operative neuralgia of the spheno-palatine ganglion. Hyperesthetic rhinitis differs from hay fever in that it makes its appearance at any time of the year, the paroxysms being irregular in their time of appearance, their duration and severity.

The technic of this useful operation as described by Pollock (*Illinois Medical Journal*, May, 1915) is not difficult, there is comparatively no danger associated with the procedure when performed under the usual aseptic conditions, and the results seem to be well worth while. It is, at any rate, a method of treatment which has received but little attention and merits more extensive trial than it has yet had.

DOES INSANITY EVER FOLLOW OPERATION?

The term "post-operative insanity" has become somewhat too prevalent and convenient. There are several objections to it aside from the obvious one, that is, that its existence as a clinical entity may be seriously doubted. In the first place, the term "insanity," expressing as it does a legal rather than a medical concept, should have an extremely limited use, being applied only to cases where a designation of an individual's mental status is required by a legal body to determine his responsibility or his social possibility.

Then, too, by including the term "post-operative" in this designation, we say that the mental disorder followed the operation and imply that it was a sequela of it. There are terms already in use covering practically all psychoses which will be found in such circumstances. For instance, if the trouble was the result of fatigue of the system as a whole, assisted by the condition which led to the operation and aggravated by the extra drain of the operation on the system we may describe it as an "infection exhaustion psychosis." If the psychosis was actually due to the trauma of the operation itself, as in a head operation, we may call it a "traumatic psychosis." If to drugs given before or after the operation plus the narcosis at the time of operation, it would come under the head of "intoxication psychosis." If the mental disorder is found to be of neurotic origin, as will often prove to be the case, it is a psychoneurosis.

Dr. J. M. Aiken has made an investigation into cases of so-called "post-operative insanity" and reports his results in the *American Journal of the Medical Sciences* for May. He does not believe they occur as the result of the operation itself. He says:—

"Either sepsis, the administration of some drug, or poor judgment by the surgeon who operated on a patient ripe for mental or nervous collapse caused them. Of these three possible factors the latter is probably the most frequent ultimate cause for post-operative psychoses or neuroses."

Dr. Aiken thinks that these conditions were coincidental merely with the operation and would have occurred even in the absence of the latter. Even supposing them to have been the result of the operation, he finds in a majority of cases that they do not outweigh the benefits of the operation.

Let us then dispense with the term "post-operative insanity," if for no other reason than because it may come under the eyes of laymen and add one more prejudice against the surgeon's knife to the possible detriment of a patient who urgently requires operation. But to avoid the appearance of psychoses and neuroses after operation it would be well for surgeons to consult with alienists before operating on patients of manifestly neuropathic tendencies.

MASSACHUSETTS MEDICAL SOCIETY.

THE one hundred and thirty-fourth anniversary of the Massachusetts Medical Society was successfully observed at its annual meeting in Boston last week, of which the complete program was published in the issue of the JOURNAL for June 3. Between 600 and 700 Fellows were in attendance. The morning of Tuesday, June 8, was devoted to clinics and demonstrations at the several hospitals. On the afternoon of that day were held the meetings of the sections on medicine, surgery and on tuberculosis. The session of the section on medicine was devoted to a symposium on heart disease. On Tuesday even

ing at the Copley-Plaza Hotel, Dr. Joel E. Goldthwait delivered the Shattuck Lecture on "An Anatomic and Mechanistic Conception of Disease," the full text of which is published in this issue of the JOURNAL with editorial comment in another column. Following the lecture there was an informal reception to the president with music and refreshments.

The annual meeting of the society was held on the morning of Wednesday, June 9, and the papers constituted a symposium on preventable diseases from the standpoint of public health and preventive medicine. Following this program, Dr. Everett A. Bates of Springfield delivered the annual discourse at noon on "Some Perplexities in Modern Medicine," the complete text of which was published in last week's issue of the JOURNAL. The combined meeting of the sections of medicine and surgery, held on Wednesday afternoon at the Boston City Hospital, was devoted to a symposium on empyema. The complete text of all these papers, with full report of the discussion and other proceedings, will appear in subsequent issues of the JOURNAL.

The annual dinner was held at the Copley-Plaza Hotel on the evening of Wednesday, June 9, and was a thoroughly entertaining and successful occasion, attended by over 800 Fellows and guests.

The principal addresses were delivered by Lieutenant-Governor Grafton D. Cushing, Dean Edmund S. Rousmanière, Professor Charles H. Grandgent, and the Honorable William H. Taft. The following officers of the Society were re-elected for the ensuing year: President, Dr. Charles F. Withington; treasurer, Dr. Edward M. Buckingham; and secretary, Dr. Walter L. Burrage.

AN OPERATING ROOM ON WHEELS.

BEARING in mind the ancient adage concerning the parentage of invention, it is not surprising that the exigencies of the present war have called forth many examples of the ingenuity of the medical man. Several models of motor cars containing miniature operating rooms for use at the front have been devised. Their uses are chiefly to serve casualty clearing stations and to take care of cases of grave abdominal injury, head cases and severe wounds necessitating immediate operation. They are not to be used for removable cases, and it is required of them primarily that they shall be capable of taking the surgeon and anesthetist to the place where they are wanted and provide them with all they require.

One of these cars, designed by Dr. G. H. Colt, of the Aberdeen Royal Infirmary, and now on exhibition in London, seems to be the latest word in ingenuity, convenience and compactness. It consists of two parts, a body and a cab, the former being roughly three times the size of the latter. The car as a whole is six feet, six inches wide, seven feet high, and the wheel base is eleven feet, six inches. The weight of the whole is 2½ tons. The dimensions of the body which contains the operating room are 9 feet 6 inches, by 6 feet 6 inches. Besides the chauffeur, the car carries a surgeon, an assistant, an anesthetist and a nurse. It is capable of making a speed of about 20 miles on hour. The cost of the car itself is $4350 and the surgical equipment costs about $1000.

There are so many features worthy of comment about this car that space will not permit mention of half of them. Examples are a tailboard which is so devised that when it is closed the upper surface, over which the patient has been carried, is on the outside. All the boiling and sterilizing is done in the cab, so that some of the most bulky features of the usual operating room are eliminated. The dust is swabbed off the inner walls of the car with a dilute, antiseptic solution of glycerine.

CONSTRUCTION OF LOCAL TUBERCULOSIS HOSPITALS.

In the issue of the JOURNAL for May 13, we commented editorially on the Worrall tuberculosis hospital bill (House 2088) and pointed out the great undesirability of its passage. This bill was referred to the committee on public health, and, at a hearing before this committee, was opposed by Dr. Allan J. McLaughlin, state commissioner of health, on the ground that it was permissive rather than mandatory legislation and did not state specifically when the proposed hospitals should be built by the county commissioners. At the same time he declared himself in favor of a larger hospital unit for the care of tuberculous patients and apparently on the basis of his recommendation the public health

committee filed in the senate on May 25, a substitute measure providing for an investigation by the Massachusetts State Department of Health as to the advisability of establishing county or district hospitals for the care of tuberculosis patients exclusive of cities having 50,000 or more inhabitants. The bill provides that the health department shall report its findings to the next session of the general court.

It may probably be assumed that this substitute measure will effectually shelve the Worrall bill for the present session and by leaving in force the tuberculosis hospital law of 1911, requiring the establishment of local tuberculosis hospitals during the present year, will avoid the retrograde step whose undesirability and dangers we have previously indicated.

MEDICAL NOTES.

NEW YORK DEATH RATE.—The noteworthy feature in the weekly mortality report issued by Commissioner of Health Goldwater for the week ending June 5, 1915, is the saving of 88 lives that would have been lost had the death rate for the corresponding week of last year prevailed during the past week.

The rate for the first twenty-three weeks of 1915 is 14.44, as compared with 15.15 for the corresponding period of 1914.

Several of the infectious diseases show a slight increase, which, however, is offset by reductions in the death toll of other diseases of this group.

The greatest increase is seen under the heading of broncho-pneumonia.

THE ARMY MEDICAL SCHOOL GRADUATION.—The graduating exercises of the Army Medical School, Washington, D.C., were held on June 1. Diplomas were awarded to thirteen graduates. First Lieutenant Harry D. Offutt of Maryland was awarded the Hoff Memorial medal and First Lieutenant Raymond E. Scott, of Missouri, the Sternberg medal.

GIFT TO THE UNIVERSITY OF CALIFORNIA.—It is announced that an annual gift of $1200 has been offered by a friend of the University of California in memory of Dr. Edith J. Claypole, research associate in the department of pathology, who died on March 26, 1915. This sum will be used to maintain the position which she held and to enable the continuance of the investigation which she had been making in regard to improved methods for immunization against and treatment of typhoid fever.

ASSOCIATION OF AMERICAN PHYSICIANS.—At the recent annual meeting of the Association of American Physicians, held in Washington, D. C., Dr. Henry Sewall of Denver, Colo., was elected president and Dr. George Dock of St. Louis, vice-president for the ensuing year.

AMERICAN NEUROLOGICAL ASSOCIATION.—At the recent annual meeting of the American Neurological Association, held in New York City, Dr. Llewellys F. Barker was elected president for the ensuing year.

GIFT TO INDIANA UNIVERSITY.—It is announced that the University of Indiana has received from Dr. Luther Dana Waterman of Indianapolis, emeritus professor in the Indiana University School of Medicine, a gift of $100,000, subject to an annuity during his lifetime and on condition that the University shall appropriate an amount equal to the income from the fund. The entire proceeds are to be devoted to scientific research.

EUROPEAN WAR NOTES.—The recent entrance of several more European cities into the zone of warfare gives additional interest to the following table of comparative death rates from diphtheria in times of peace before and after the introduction of antitoxin in its treatment:—

Place.	BEFORE ANTITOXIN. Death Rate Per 10,000 Pop. 1881 to 1890.	SINCE ANTITOXIN. Death Rate Per 10,000 Pop. 1896 to 1910.
Boston	13.7	4.7
New York	16.6	5.27
Philadelphia	11.2	6.7
Chicago	15.4	3.76
Berlin	14.3	2.6
Vienna	6.1	2.4
London	4.1	2.7
Paris	8.1	1.2
Edinburgh	4.2	1.9
Montreal	14.5	4.2
Toronto	9.8	6.3
Rio de Janeiro	2.3	0.5
Brussels	1.1	1.0
Amsterdam	9.5	1.26
Copenhagen	8.4	1.5
Moscow	7.1	5.3
Petrograd	8.3	7.5
Budapest	10.4	2.5
Trieste	12.9	3.2
Milan	9.5	2.7
Turin	5.8	1.2

This table was recently contributed by Dr. Edwin H. Place of Boston in a letter to the daily press on the importance of antitoxin treatment of the disease.

Considerable professional interest attaches to the apparently serious illness of King Constantine of Greece. It is reported that following an attack of influenza, the king recently developed an empyema. On June 5 Dr. von Eiselsberg of Vienna, who had been summoned in consultation, resected a portion of the king's tenth left rib. It is said that pus had been found in the left pleural cavity by aspiration as long ago as May 15. On the day following the operation the

bulletin stated that the king's temperature was 104.8, his pulse 140 and respiration 39. It is believed, however, that these represent the normal septic reaction after operation, and the king's condition is not as yet critical. On June 13, it was reported that the king's temperature was normal and his condition definitely improving.

Report from Nish, Serbia, by way of London, on May 28, states that the Serbian government has issued a call for forty additional American physicians to assist in the suppression of typhus fever and the medical care of the population. There are at present sixteen American physicians in Serbia with Dr. Richard P. Strong and twenty-five with the American Red Cross.

On June 12 the totals of the principal American relief funds for the European war reached the following amounts:—

	N. Y.	N. E.
Belgian Fund		$262,43.90
Polish Fund	$63,513.00	46,843.59
Secours National	79,249.44	
Jewish Fund		62,909.52

On June 13 a unit of 32 surgeons and 75 nurses left Chicago, and on June 15 sailed from New York for England to serve with the British Royal Army Medical Corps.

PREVALENCE OF MENINGITIS, POLIOMYELITIS AND SPOTTED FEVER.—In the weekly report of the United States Public Health Service for May 28, it is noted that during the month of April, 38 new cases of cerebrospinal meningitis were reported in Virginia and 18 in Ohio. During the same month there were 23 cases of poliomyelitis in Virginia and 6 in Ohio. Fourteen human cases of Rocky Mountain spotted fever were reported during April in Montana.

TYPHUS FEVER IN MEXICO.—Report from Washington, D.C., on June 8, states that typhus fever is prevalent in Monterey, Mexico, where there is extensive distress among the population. The number of cases is not stated.

"The Red Cross is despatching shortly two additional cars of corn to Monterey. On the *Moro Castle* the Red Cross shipped on June 10 twenty-five cases of drugs and hospital supplies to Consul Canada at Vera Cruz, to be forwarded to Spanish, American and French hospitals in Mexico City. These hospitals are crowded and in great need."

LONDON DEATH RATES IN APRIL.—Statistics recently published show that the total death rate of London in April, 1915, was 19.6 per thousand inhabitants living. Among the several districts and boroughs the highest rate was 27.7 in the precincts of the old city, and the lowest was 12.8 in Lewisham, an open residential region on the south.

SHIPMENT OF RED CROSS SUPPLIES TO SERBIA.—Report from New York on June 8 states that on that day the American Red Cross shipped aboard the steamship *Joannina* to the American consul at the Piraeus, Greece, ten automobile trucks for the use of the American Red Cross Sanitary Commission in Serbia.

The shipment also includes eighty-nine tents and forty-two cases of hospital garments, hospital supplies and miscellaneous clothing for the Serbian Red Cross and the American Red Cross hospital units in Belgrade.

TYPHOID FEVER IN ASIA MINOR.—Report from Constantinople by way of Athens states that typhoid fever is now extensively prevalent among the troops and the civilian population in Asia Minor. It is reported that seventy-five physicians have already died there of this disease.

THE SECOND HARVARD SURGICAL UNIT.—It is announced that the second Harvard surgical unit, whose organization we have noted in previous issues of the JOURNAL, will sail from New York on June 22, aboard the steamer *Noordam* for Falmouth, Eng., for six months' service in British or French hospitals. The expedition consists of 32 surgeons and 75 nurses, the majority of whom have volunteered for the entire period of service. The personnel of the physicians and surgeons composing this unit is as follows:—

Dr. Edward H. Nichols, surgeon to Boston City Hospital, surgeon in charge of the unit.

Dr. Charles Allen Porter, visiting surgeon to Massachusetts General Hospital.

Dr. Franklin Greene Balch, visiting surgeon to Massachusetts General Hospital.

Dr. Alexander Quackenboss, visiting ophthalmologist to Massachusetts Charitable Eye and Ear Infirmary.

Dr. Harris Peyton Mosher, visiting surgeon to Throat Department, Massachusetts General Hospital.

Dr. Roger Irving Lee, professor of hygiene, Harvard University and visiting physician to Massachusetts General Hospital.

Dr. William E. Faulkner, assistant visiting surgeon to Boston City Hospital.

Dr. Robert H. Vose, surgeon to Boston Dispensary.

Dr. Allen Greenwood, ophthalmic surgeon to Boston City Hospital.

Dr. Daniel B. Reardon, Quincy, visiting physician to Quincy City Hospital.

Dr. Nathaniel S. Hunting, Quincy, visiting surgeon to Quincy City Hospital.

Dr. Walter M. Lacey, Chyenne, Wyoming, Harvard Medical School, class of 1912.

Dr. Pierce P. McGann, Somerville, Tufts Medical School, class of 1912.

Dr. John Jenks Thomas, professor of Neurology at Tufts Medical School, and visiting neurologist to Boston City Hospital.

Dr. Harry Fairbanks Hartwell, visiting surgeon to out-patient department, Massachusetts General Hospital.

Dr. Pierce Henry Leavitt, Boston City Hospital, Harvard Medical School, class of 1914.

Dr. Charles Wesley Bressler, Harvard Medical School.

Dr. William E. Hunter, Harvard Medical School.

Dr. Philip Duncan Wilson, Harvard Medical School, class of 1914, house surgeon, Massachusetts General Hospital.

Dr. George Warren Bachman, Boston City Hospital.

Dr. Walter J. Dodd, instructor in Roentgenology at Harvard Medical School, x-ray department, Massachusetts General Hospital.

Dr. George Loring Tobey, Jr., assistant visiting surgeon to Massachusetts Charitable Eye and Ear Infirmary.

Dr. Frank Whipple Snow, Newburyport, Harvard Medical School, class of 1902.

Dr. Varazstad H. Kazanjian, demonstrator of prosthetic dentistry, Harvard Dental School.

Dr. Byron B. Stookey, Marine Hospital, Chelsea.

Dr. Harold M. Frost, Boston City Hospital.

Dr. Russell P. Borden, Boston City Hospital.

Dr. Harold M. Goodwin, Boston City Hospital.

Dr. Joseph C. Horan, Harvard Medical School, class of 1915.

Dr. Frederick A. Coller, Ambulance Hospital, Paris.

Dr. Robert R. Sattler, Harvard Medical School, class of 1918.

Dr. E. B. Allen, Harvard Medical School.

Dr. Albert A. Barrows, Providence.

Dr. E. P. Laskey, Haverhill, Mass.

BOSTON AND NEW ENGLAND.

THE CAMPAIGN AGAINST CANCER IN NEW ENGLAND.—The following statement is issued by the press service of the American Society for the Control of Cancer:—

"The New England states generally show a higher death rate from cancer than any other group of states. This does not mean that New England people are more susceptible to this disease. Cancer is a disease of later adult life and it is well known that in parts of New England there are more old people proportionately to the population than in many other regions. Nevertheless, the death rates recently published by the United States Census Bureau have stimulated much activity in these states in the educational campaign for the control of malignant disease.

What are the facts upon which this movement is based? According to the report of the Census Bureau, in 1913 there were 49,928 deaths from cancer in the registration area of the United States, corresponding to a death rate of 78.9 per 100,000 of the population. All the New England states have individual cancer death rates much higher than this. Connecticut's rate, which is the lowest of any of the New England states, was 85.1. Vermont's rate was the highest with 111.7, while the rates of the other states were correspondingly high, Maine having a rate of 107.5, New Hampshire, 104.4, Massachusetts, 101.4 and Rhode Island, 93.3. When these figures are compared with those of Kentucky, with a rate of 48, they seem indeed very high. They mean that 6,817 people died in 1913 in New England from cancer. But it does not necessarily follow that cancer is more common in New England than elsewhere. The Census Bureau attributes the high cancer death rates in certain districts to the relatively high age distribution of the population and the negligible amount of immigration. Translated into everyday terms this means that in New England the proportion of people over 40 years of age, or at the cancer age, to those under 40, and so less liable to cancer, is greater than in other places. Yet there is no doubt that the cancer death rate in New England as well as in other parts of the country is much higher than it ought to be. Without question a large percentage of cancer deaths can be prevented by early recognition of the symptoms and prompt recourse to competent surgical advice and treatment. Cancer is not a hopeless, incurable affection, as so many people wrongly believe. Those who know the facts believe that if the public can be properly educated in regard to the early signs of the disease and will act on this knowledge, the present mortality should be reduced at least one-half, and perhaps two-thirds.

That New England is awake to this opportunity of saving lives is evident from the activity in several states. Vermont medical men have become so concerned over the high cancer death rate of their state that they recently held a series of meetings on the subject. The New Hampshire State Board of Health has recently published sound advice in its *Bulletin*. In Maine an active committee of the State Medical Society is arranging public lectures and causing the publication of instructive articles in the newspapers. Massachusetts has a well organized branch of the American Society for the Control of Cancer, with headquarters in Boston. The Vermont State Medical Society arranged a series of public meetings to spread the bad news of the high cancer death rate and the good news of the hope of controlling the disease by earlier recognition and prompt surgical treatment. Morning, afternoon and evening meetings were held on Tuesday, Wednesday, Thursday and Friday, June 8th to 11th, at Rutland, Burlington, Montpelier and St. Johnsbury. The Vermont State Board of Health sent its Secretary, Dr. Charles F. Dalton, to address each of these meetings and the American Society for the Control of Cancer was represented by Dr. Francis Carter Wood, Director of Cancer Research at Columbia University, New York City.

and by Dr. J. M. Wainwright, Chairman of the Cancer Committee of the Pennsylvania State Medical Society.

SCARLET FEVER EPIDEMIC IN NEEDHAM.—An outbreak of scarlet fever has been reported in Needham Heights and North Needham. The public schools and churches have been closed and residents have been requested to refrain from attending moving picture theatres and other gatherings. A total of 17 cases has occurred. The source of the infection is not known.

CONCORD DEACONESS HOSPITAL.—It is announced that the Deaconess Hospital at Concord, Mass., has received from an anonymous donor a gift of a private ward building and nurses' home to be built in the rear of the present hospital and completed in the coming fall. The building will be 70 by 30 feet in ground area and will contain eight private rooms on the first floor.

HOSPITAL BEQUESTS.—The will of the late John E. Martin, of Portland, Me., which was filed for probate in that city on June 7, contains bequests of $50,000 each to the Maine General Hospital and the Maine Eye and Ear Infirmary.

The will of the late Abby Wales Turner, who died in Randolph, Mass., on May 13, was filed on June 8 for probate at Dedham, Mass. Among many public charitable bequests it contains legacies of $1,000 each to the Sarah Fuller Home for Deaf Children, the New England Hospital for Women and Children and the Brookline Free Hospital for Women.

QUARANTINE FOR FOOT AND MOUTH DISEASE.—Report from Brighton, Mass., on June 8 states that the federal quarantine is still in force over the local stockyards. This quarantine was established in November, 1914, and is not likely to be lifted for several months, although no new cases of the disease have been reported in Massachusetts since May, 1915. Cattle are now being brought, however, to the Brighton stockyards from Maine, New Hampshire and Vermont for immediate slaughter.

EXHIBIT BY STATE BOARD OF INSANITY.—During the past week there was held at the Massachusetts State House by the State Board of Insanity an exhibit of brushes, brooms, boots, hats, rugs and clothing made by inmates of the 13 institutions under the control of the Board. This exhibit which has been announced in previous issues of the JOURNAL, represents not only a therapeutic, but an economic value.

"In several of the hospitals the patients make all of the furniture; in one, all of the straw hats used; in most, the patients are making all the rugs, brooms, brushes and mattresses, and in one they knit by machinery all of the stockings and sweaters and make all of the clothing of the patients. This is not uniform, but of great variety.

"Today a majority of the patients are employed in useful work—a contrast from former years when they were sitting on benches in the wards with absolutely no occupations. In cases of idiocy and dementia the patients unravel stockings and pick over mattresses. They work from one to eight hours per day."

SEIZURE OF MILK BOTTLES.—Report from Worcester, Mass., states that on June 7 the local commissioner of weights and measures made a seizure of 50,000 paraffined paper milk bottles consigned to a local creamery by a Wisconsin manufacturer. The grounds for the seizure are technical, since the bottles, though properly stamped for use in Wisconsin, were not stamped in accordance with the requirements of the Massachusetts statute.

DEPORTATION OF UNDESIRABLE ALIENS.—The monthly bulletin of the Massachusetts State Department of Health for March, 1915, contains the following important statement relative to the possibility of deportation of certain undesirable aliens within three years of their arrival in this country:—

"It is not generally known that aliens who are suffering from a dangerous contagious disease, insane persons and others who have become a public charge may be deported to Europe at any time within three years after landing, provided their condition is due to causes prior to landing. Lack of knowledge of this fact results in some communities assuming financial burdens which are entirely needless.

"Dr. Allan J. McLaughlin, the Commissioner of Health, has issued a circular letter to district health officers calling their attention to the immigration law and directing them to advise local officials in their districts to avail themselves thereof.

"Aliens suffering from tuberculosis are not admitted to the United States, but many aliens certified as having poor physique, flat chest, underweight for age, anemia and other rather indefinite defects, are admitted. These aliens are excellent material for tuberculosis if they are exposed to slum conditions.

"Some time ago Dr. McLaughlin requested the Commissioner General of Immigration to furnish lists of aliens, destined for Massachusetts cities and towns, having the defects mentioned above. On April 8, Mr. J. B. Densmore, Acting Secretary of the Department of Labor, came from Washington and conferred with Dr. McLaughlin relative to this matter. He agreed to coöperate with the State Department of Health in so far as his appropriation will permit. When these lists are received the Commissioner of Health will then notify the local boards of health, and the tuberculosis dispensary will be able either to prevent the develop-

ment of tuberculosis or to arrange for deportation of the alien at the earliest possible moment if the disease should develop."

NEWTON HOSPITAL TRAINING SCHOOL.—The annual graduation exercises of the Newton (Mass.) Hospital Training School were held in that city on June 2. Diplomas were awarded to a class of 19 pupil candidates.

LONG ISLAND HOSPITAL TRAINING SCHOOL.—The annual graduation exercises of the Long Island Hospital Training School for Nurses were held at that institution on June 3. The principal addresses were made by Dr. Allan J. McLaughlin and Dr. Malcolm Seymour. Diplomas were presented to a class of 17 pupil candidates.

MASSACHUSETTS STATE NURSES' ASSOCIATION.—The twelfth annual meeting of the Massachusetts State Nurses' Association was held in Boston on Saturday, June 5. At the morning session the principal subject of discussion was that of the registration of nurses, and the Massachusetts State League of Nursing Education held a joint session on this subject with the Nurses' Association. At the afternoon session a number of short papers were presented and the following officers were elected for the ensuing year:—

President, Miss Sara E. Parsons of the Massachusetts General Hospital; vice presidents, Miss Mary M. Riddle of the Newton Hospital and Miss Lucia Jacquith of the Worcester Memorial Hospital; recording secretary, Mrs. Jane Barker Homer; treasurer, Miss Esther Dart of the Stillman Infirmary, and corresponding secretary, Miss Charlotte W. Dana of the Boston Lying-in Hospital.

The officers elected by the State League of Nursing Education were the following:—

President, Miss Emma E. Nichols, Boston City Hospital; vice president, Miss Bertha Allen, Newton Hospital; secretary and treasurer, Mrs. Alice H. Flash, Massachusetts Homeopathic Hospital.

In the evening was held the second annual dinner of the Massachusetts Red Cross Nurses under the presidency of Dr. Laura A. C. Hughes. The speakers at this dinner were Surgeon General Frank P. Williams, representing Governor Walsh; Mgr. Splaine; Emergency Secretary Louisa Loring of the Massachusetts Red Cross, Miss Catherine P. Loring, and Miss Mabelle Welch, night superintendent of nurses at the Peter Bent Brigham Hospital, who recently returned from six months' service at the Red Cross hospital at Paignton, South Devon, England.

CASES OF INFECTIOUS DISEASES reported to the Boston Board of Health for the week ending June 9, 1915: Diphtheria, 77 cases, of which four were non-resident; scarlatina, 120 cases, of which 18 were non-resident; typhoid fever, seven cases; measles, 236 cases, of which two were non-resident; tuberculosis, 66 cases, of which four were non-resident.

The death rate of the reported deaths for the week was 15.11.

Massachusetts Medical Society.

MIDDLESEX EAST DISTRICT MEDICAL SOCIETY.

MEMORIAL RESOLUTION FOR DR. KELLY.—Whereas, God in his infinite wisdom has seen fit to end the earthly life of our former president, Seth Wight Kelly of Woburn:

Resolved: That the members of this Society deeply deplore the loss of their highly esteemed fellow member, who was one of the early members of this Society, always interested and faithful to its obligations and so adding greatly to its efficiency and success. We wish to express our heartfelt appreciation of his efforts and of his many virtues. He was a gentleman of the old school in ideals and a true New Englander of the finest type. As a physician he was learned, proficient, honored and beloved.

Resolved: That a copy of these resolutions be sent to his bereaved family, another to the BOSTON MEDICAL AND SURGICAL JOURNAL, and another be spread on the records of our district society.

Miscellany.

THE CULTIVATION OF DRUG PLANTS IN THE UNITED STATES.

IN a recent bulletin (No. 663), "Drug Plants Under Cultivation," the United States Department of Agriculture warns farmers that in order to have the cultivation of drug plants financially successful in this country, the introduction of improved methods and the extensive ue of machinery is probably necessary. Under these circumstances the natural tendency will be to increase the production in the interest of economy. The demand for many drug plants, however, is so limited that if large areas are brought under cultivation there is considerable danger of overproduction. Prospective growers are urged, therefore, to acquaint themselves with market conditions before investing any considerable sum of money in this way.

On the other hand, the number of drug plants which may be grown in the United States is large. Many native medicinal plants which are found in their wild state in a few sections have been successfully cultivated in situations far beyond their natural range. In suit-

able soil and under favorable weather conditions the following plants have done well under cultivation in numerous places in the Central and Eastern states and, if the difference in climatic conditions is not too great, will probably be suitable in other regions: anise, belladonna, burdock, caraway, catnip, camomile, conium, coriander, digitalis, dill, echinacea, elecampane, fennel, henbane, horehound, pennyroyal, sage, strammonium, tansy, thyme.

The bulletin already mentioned contains specific instructions for the cultivation of each of these plants and of a number of others. In general, it may be said that wild medicinal plants are much more difficult to propagate from seeds than species commonly grown in gardens. Moreover, in growing medicinal plants from seed it is much better to start the plants in a greenhouse or hotbed than to sow the seed directly in the field. Under any circumstances, the preparation of the soil is of prime importance. A seed bed prepared by thoroughly mixing equal parts of garden soil, leaf mold, well rotted manure, and clean sand will be suitable for the germination of most seed. The heavier the soil the greater the quantity of seed should be.

Drug plants grown for their roots are usually harvested in the fall or early in the spring, while the plant is still dormant. Roots collected during the growing season often shrink excessively in drying, which in all cases must be thoroughly done. Large roots are usually split or sliced, spread in thin layers on clean floors, and stirred or turned frequently. The process of drying may take several weeks, although the time can be reduced by the use of artificial heat. Good ventilation is an essential in order that the moisture driven off from the roots may be allowed to escape.

Leaves and herbs are usually harvested when the plants are in flower. Picking by hand in the field is a slow process, and the entire plant is, therefore, often cut and the leaves stripped after the plants have been brought in. Flowers may be gathered either by hand, which is a laborious method, or by devices similar to a cranberry scoop or a seed stripper.

In addition to the care and knowledge needed for the production of these medicinal plants, the grower must be familiar with market conditions. In many cases there is no local market for the product, and the grower should then send samples to dealers in crude drugs or the manufacturers of medicinal preparations in order to obtain a price for his crop. Some growers who have been careful to maintain a very high quality in their product have succeeded in building up a trade at a price a little above the prevailing market quotations. It is also possible to secure a contract for the sale of the entire crop in advance, thus insuring a definite market. In general, the bulletin says, the growing of drug plants in this country seems to be more suitable to well equipped cultivators who devote themselves entirely to it than to the general farmer who looks upon it only as a minor source of income.

Correspondence.

THE CLEAN MILK BILL.

CITY HALL, WEST NEWTON, June 4, 1915.

Mr. Editor: I have been much interested in the correspondence in regard to the so-called Clean Milk Bill and the comments thereon which have appeared in the JOURNAL and I cannot see that the veto of the bill has been such a blow to the cause of clean milk.

It has always seemed to me that bill was unnecessary, for Chapter 744 of the Acts of 1914 gives local boards of health all the power needed to insure clean milk: if the local boards do not choose to exercise that power it is their own fault or that of the communities which they serve.

Under the provisions of Chapter 744 no one, be he producer, contractor or storekeeper, can sell milk in any city or town in Massachusetts until every dairy from which the milk is derived has been granted by the local board of health, a permit stating that it conforms to local requirements.

The Attorney-General has ruled that the local board is the sole judge as to whether it will or will not issue this permit. Further than this the local board has the power to revoke any permit once granted if, in its opinion, the conditions under which it was issued have been violated. If a permit is revoked a notice must be sent to the State Department of Health, which in turn must notify other communities of the fact.

As Dr. Luce truly says in his letter in the JOURNAL of June 3d, a dairyman will very quickly clean up if he finds that he is going to lose his market for his product.

As for the experience of the Winthrop Board of Health, referred to in another article, it could have asked the contractor to specify which of his 1500 dairies he would use for supplying Winthrop. Having this list, the dairies on it could be inspected and, as by local ordinance, a dealer can be prohibited from changing his source of supply without previously notifying the local board, the situation would be under control. If he refused to give this list his permit for selling any milk in Winthrop could have been revoked. While this would perhaps have been an extreme measure, it was entirely within the power of the board, as I understand the law.

It is difficult for the board of a small community to do out of state inspection and this branch of the work might well be delegated to the State Department of Health, but within the state the local boards should control the work.

Where milk comes into two or more neighboring communities from the same districts these communities can pool their issues, the inspector of one doing the work for both in a given section, thus preventing duplication. Each community could appoint the inspector of the other its inspector for this work.

In closing permit me to say that when the public comes to realize that clean milk deserves a higher price than ordinary milk and is willing to pay for it, the producer will have more encouragement to give it what it wishes.

At present the man who tries to live up to requirements and produce clean milk sees his neighbor who has a dirty dairy get the same price for his dirty milk that he does for his clean milk. Naturally he becomes discouraged and ceases to care.

FRANCIS GEO. CURTIS, M.D.,
Chairman, Newton Board of Health.

BELGIAN PHYSICIANS' RELIEF FUND.

REPORT OF THE TREASURER OF THE COMMITTEE OF AMERICAN PHYSICIANS FOR THE AID OF THE BELGIAN PROFESSION FOR THE WEEK ENDING JUNE 5, 1915.

CONTRIBUTIONS.

Dr. Arthur G. Larkin, New York, N. Y.	$ 10.00
Dr. John A. Hawkins, Pittsburg, Pa.	10.00
Medical Society of the Co. of Greene, Catskill, N. Y.	15.00
Wilson County Medical Society, Fredonia, Kansas	15.00
Dr. Robert C. Davis, Johnstown, Pa.	5.00
Dr. Emery Marvel, Atlantic City, N. J.	25.00
Dr. G. J. Hagens, Chicago, Ill.	15.00
Medical Society of the County of Westchester, (Second contribution), White Plains, N. Y.	2.50
Rockland County Medical Society, Nyack, N. Y.	28.00
San Luis Valley Medical Society, Alamosa, Colorado	25.00
Receipts for the week ending June 5	$ 150.50
Previously reported receipts	7008.50
Total receipts	$7159.00
Previously reported disbursements:	
1625 standard boxes of food @ $2.20	$3575.00
1274 standard boxes of food @ $2.30	2930.00
213 standard boxes of food @ $2.28	485.64
Total disbursements	$6990.84
Balance	$168.16

F. F. SIMPSON, M.D., *Treasurer*,
7048 Jenkins Arcade Bldg.,
Pittsburg, Pa.

NOTICES.

THE PSYCHOPATHIC HOSPITAL, 74 Fenwood Road, Boston. Third annual conference on the Medical and Social Work of the Psychopathic Hospital, Boston, Friday, June 19, 1915, 4 to 6 P.M., under the auspices of the Trustees of the Boston State Hospital.

(Chestnut Hill or South Huntington Avenue cars—alight at Fenwood Road.)

Program 4 to 6 P.M. President Henry Lefavour, Chairman of the Board of Trustees, will preside.

1. "The Intensive Group of Psychopathic Social Service Cases," Mary C. Jarrett.
2. "Routine Mental Tests as the Proper Basis of Practical Measures in Social Service," Helen M. Wright.
3. "Conclusions from Repeated Mental Tests of Certain Psychopathic Subjects," J. H. Beasley.
4. "The Multiple Choice Method of Mental Examination in Estimating Candidates for Employment," C. Rossy.
5. "Problems Suggested for a Review of Faradic Sensory Threshold Work with Psychopathic Subjects," G. Philip Grabfield.
6. "Analysis of Recoveries at the Psychopathic Hospital: III. A Third Series of One Hundred Cases, Considered Especially from the After-Care Standpoint," Frankwood E. Williams.
7. "Massage in Hypertensive and Hypotensive Cases," J. F. Krasnye.
8. "Spinal Fluid Sugar in Psychopathic Subjects," H. C. Solomon and J. B. Rieger.
9. (Presented in brief abstract.) "Gold Sol Reaction Work."

(a) "The Clinical Status of the Method: Spinal Fluid Determinations in 500 Cases," H. C. Solomon.

(b) "Is the Cerebrospinal Syphilis Gold Sol Reaction in Some Sense a *Forme Fruste* of the Paretic Reaction?"

(c) "The Bacteriology and the Gold Sol Reaction of Post-Mortem Cerebrospinal Fluids," Myrtelle M. Canavan and E. S. Welles.

(d) "Gold Sol Reactions in Miscellaneous Body Fluids," E. S. Welles.

10. "The Margin of Error in Psychopathic Hospital Diagnoses: Second Study, 1914," E. E. Southard.

The following are presented by title or in the form of exhibits or charts, on view in the out-patient department and in the laboratories, 3 to 4 P.M.

11. "Variations in the Sensory Faradic Threshold of Psychopathic Subjects: Fifth Study—Psychoneuroses," G. Philip Grabfield.
12. "Effects of Treatment of Alcoholic Conditions at the Psychopathic Hospital and at General Hospitals," Donald Gregg.
13. "Photographs and Specimens from a Tumor of the Basis Cerebri," Donald J. MacPherson.
14. "Fatty Changes in Purkinje Cells of Cerebellum in Toxic Psychoses," Egbert W. Fell.
15. Note on the Frequency of Surgical Conditions and Operations in Hysterical Subjects," A. G. Gould.

NOTE.—The Out-Patient Department and the Laboratories will be open for inspection before the meeting, 3 to 4 P.M., and will contain certain exhibits and demonstrations.

The more social part of the program has been put before the more medical part for the benefit of those who come with special interests but limited time.

HARVARD MEDICAL ALUMNI ASSOCIATION.

An informal table d'hôte luncheon will be held by the Harvard Medical Alumni Association on June 23 at the University Club in San Francisco. Dr. William P. Lucas of the University of California Medical School and Mr. William Thomas, president of the San Francisco Harvard Club will be in charge.

APPOINTMENTS.

BOSTON MILK AND BABY HYGIENE ASSOCIATION.—At a meeting of the trustees of the Boston Milk and Baby Hygiene Association on June 2, *Dr. J. Herbert Young* of Newton, Mass., was unanimously appointed medical director to succeed Dr. Arthur A. Howard of Boston who has recently resigned.

JOHNS HOPKINS HOSPITAL.—*Dr. Roscoe W. Hall* has been appointed resident physician of the Phipps Clinic of the Johns Hopkins Hospital, in succession to *Dr. David K. Henderson* who has been appointed superintendent of the Royal Asylum at Glasgow, Scotland.

STANFORD UNIVERSITY MEDICAL SCHOOL.—*Dr. Charles Harvey Bailey* has been appointed assistant professor of pathology. *Dr. Henry Augustus Stephenson*, assistant professor of obstetrics and gynecology. *Dr. George DeForest Barnet* instructor in medicine and *Dr. Jean Redman Oliver* instructor in pathology.

UNIVERSITY OF CALIFORNIA.—*Dr. Henry Albert Mattill* has recently been appointed assistant professor of nutrition.

UNIVERSITY OF SHEFFIELD.—*Dr. J. Sholto C. Douglas*, formerly lecturer on pathology in the University of Manchester, England, has been appointed Joseph Hunter professor of pathology in the University of Sheffield.

RECENT DEATH.

DR. JOHN HILDRETH MCCOLLOM, formerly superintendent of the Boston City Hospital, died at his home, 29 Ivy Street, Boston, June 14, aged 72 years. He joined The Massachusetts Medical Society in 1869.